



# CALIFORNIA SOLAR INITIATIVE EARLY PROCESS FINDINGS

*Prepared for:*

**CALIFORNIA PUBLIC UTILITIES COMMISSION**

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# 1. PURPOSE OF EARLY FINDINGS REPORT

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The Opinion Dynamics Evaluation Team conducted exploratory and qualitative research in late 2009 in order to identify the key areas on which the Team should explore with a wider net in early 2010. This report presents the findings from early qualitative research with a limited number of host customers and solar contractors. It also presents findings from on-site interviews and observations at each Program Administrator's offices. The findings in this report provide an early indication of where the program is working well and where the program may improve. This early research will be used to identify the key topic areas that the Evaluation Team will further explore with the goal of providing a rigorous process evaluation report that will be available for public consumption in 2010. As such, the Evaluation Team is leveraging the findings from this early research to develop a work plan for additional Evaluation activities.

While this report provides the information needed to guide further evaluation efforts, it also gives Program Staff an early indication of where the program is working well and potential areas of improvement. As part of the program evaluation process, this report recommended that key Program Staff (the CPUC and the PAs) engage in a workshop to review the interim findings and recommendations and apply their knowledge, insight and expertise to assess the feasibility of implementing the recommendations and identify the areas that needed further exploration. As recommended in Chapter 7, the Program Staff engaged in an exercise to prioritize the interim recommendations in this report based on their potential impact to the program and the barriers to implementing them. This proved to be a productive and useful step in the program evaluation process. The Program Staff's outcome of this workshop is provided in Appendix C of this report and will be leveraged along with the interim findings to develop a work plan for additional Evaluation activities.

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## 2. REPORT FINDINGS INTRODUCTION

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The California Solar Initiative (CSI) is overseen by the CPUC and provides solar incentives to customers in the investor-owned utility (IOU) territories of Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E). The program is administrated by PG&E, SCE and the California Center for Sustainable Energy (CCSE) in SDG&E's service territory. The CSI has a budget of \$2,167 million over 10 years, and the goal is to reach 1,940 MW of installed solar capacity by 2016. This goal includes 1,750 MW from the general market program, referred to henceforth as the "CSI program" or "the program".<sup>1</sup> The incentive levels available through the program are divided into 10 steps, each step is for a targeted amount of MWs. The incentive levels available reduce automatically over the duration of the program based on the volume of MW of solar reservations issued. To date, the program has been very popular and well received as evidenced by the fact that most utility territories are already on incentive step 5 or 6 despite the program just approaching its third year of operation. This popular incentive program is very active and fluid, undergoing frequent and sometimes significant changes.

The program offers two types of incentives: Expected Performance Based Buydown (EPBB) and Performance Based Incentives (PBI). The EPBB incentives are paid based on verified solar system characteristics. The PBI incentive is a flat cents-per-kWh payment for all output from a solar system over its initial 5 years of operation. The purpose of the CSI rebate program is to provide incentives for residential and non-residential utility customers to install solar energy power generating systems that supplement a portion of their energy use and reduce carbon emissions across the state. California governor, Arnold Schwarzenegger set an objective of having "one million solar rooftops" generating 3,000 megawatts of power in California by 2016. The CSI rebate program is designed to provide front loaded incentives that would stimulate demand and interest in solar power and drive down the cost of solar energy over time; helping to produce a self-sustainable solar industry in the state. The CPUC hired the Opinion Dynamics evaluation team to:

1. Explore the solar installation steps from the perspective of host customers and contractors with the goal of identifying the steps that are going well, identifying steps that are causing pain points in the market and developing recommendations for how to improve the program's current implementation.
2. Explore the steps, time, data collection and resources involved in participating in the program from the perspective of host customers that apply directly to the program, the perspective of contractors who most often apply for program incentives on behalf of customers, and the perspective of Program Administrators that process applications for the program. The goal of this research was to explore the steps involved to submit and process applications and develop recommendations to reduce processing time.

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<sup>1</sup> The remaining 190 MW capacity goal is being advanced under low income programs. This is not a part of the work effort reported herein.

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The Opinion Dynamics Evaluation team recently conducted qualitative research with program Host Customers and Solar Contractors to explore these issues. In addition, we reviewed the various operational, organizational and management processes that are in place to administer and operate the program. Below, we discuss our method for this scope of work, followed by the detailed findings and recommendations. Lastly, we suggest an approach to prioritizing the recommendations in this report to help the CPUC and PAs implement the changes that they deem critical to program success.

### **3. METHODOLOGY**

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This document is an interim report from Opinion Dynamics Corporation to the California Public Utilities Commission (CPUC) as part of an ongoing process evaluation. This report presents our findings from Phase 1 of this evaluation. Phase 1 evaluation activities were conducted in tandem with the development of the overarching evaluation plan for the CSI program. The research conducted with host customers and contractors thus far for this evaluation is qualitative in nature as opposed to quantitative. Qualitative research cannot be extrapolated to a total population and therefore is not considered representative of a population. However, qualitative research does allow for deep exploration into multiple issues and provides insights to help steer decision-making. Qualitative research can also be a useful first step toward quantitative studies as it can delve deeply into multiple areas and help steer the direction of quantitative surveys that tend to be shorter and more focused on key pieces of data. As a next step in our evaluation, we will be working with the CPUC to conduct more extensive research in Phase 2.

#### **Host Customer Depth Interviews**

Opinion Dynamics conducted 19 customer depth interviews throughout October 2009. We solicited customer participation using a randomly drawn stratified sample frame of 8,323 customers who completed solar projects in 2008. These data were pulled from the PowerClerk database. The overarching goal of the depth interviews was to gauge customer satisfaction with the steps in the process of adopting solar through the CSI program. The interviews also explored customers' decision making processes and experience interacting with program staff and utility staff, as appropriate depending on whether the customer directly interacted with the CSI program or the utility.

We conducted interviews across the three Program Administrator (PA) territories, in key customer segments, and represented both incentive types offered by the program. The variety of customers interviewed also allowed insight into projects whose average completion time was either above or below average in comparison to other similar projects. By controlling for these variables, we were able to explore differences by PA, customer segment, incentive type and project processing time. The table below shows the number of interviews completed across all sampling variables.

**Table 1. Customer Depth Interviews**

Program Administrator	Total	Sector			Incentive Type		Processing Time	
		Commercial	Residential	Public Sector/Non-Profit/Public Entities	EPBB	PBI	Above Avg.	Below Average
PG&E	6	2	2	2	3	3	4	2
SCE	9	2	2	5	6	3	4	5
CCSE	4	2	2	0	2	2	1	3
<b>Total</b>	<b>19</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>11</b>	<b>8</b>	<b>9</b>	<b>10</b>

## Contractor Depth Interviews

Opinion Dynamics also conducted 6 depth interviews with solar contractors throughout October and November 2009. We spoke with the person within each organization that is responsible for applying to the program. The interviews lasted approximately 45 minutes and respondents came from across the three Program Administrators' (PG&E, SCE, and CCSE) service territories. The overarching goal of these depth interviews was to explore the contractors' experience participating in the CSI program, gauge satisfaction with the CSI program and how the program might be improved. The interviews also gathered the contractors' perspective on market conditions.

We strategically chose the 6 contractors for these interviews based on their extensive experience with the CSI program. After analyzing the number of total projects completed in 2008 against the number of contractors that worked on each project, we selected the contractors with the largest market share, i.e. those that completed the largest percentage of projects in each PA territory.<sup>2</sup> We chose this approach so we would speak with the industry leaders; contractors with the most knowledge of the steps involved in program participation. As shown by the table below, a total of 8,323 solar projects were completed through the CSI program in 2008. These 6 contractors combined represent the 6 companies that completed 1,681 (20%) of these projects processed in 2008. With the exception of one contractor, these respondents had experience working with multiple PAs as they have offices statewide.

<sup>2</sup> Some contractors with sizeable market share were not available to interview or declined to be interviewed.

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**Table 2. Solar Contractor Depth Interviews**

	PG&E	SCE	CCSE	Total
Total 2008 projects completed by 6 contractors interviewed	1,352	245	84	<b>1,681</b>
Total CSI Projects Completed in 2008	5,528	2,087	708	<b>8,323</b>
% of total projects completed by 6 contractors interviewed	24%	12%	12%	<b>20%</b>

## **Program Administrator Site Visits and Depth Interviews**

The primary scope of this task was to conduct a review for the various operational processes that are in place to administer and operate the CSI program at each of the three PA locations. We aimed to provide operational and organizational comparisons, highlight differences and best practices across the PAs, and identify specific opportunities for improvement in each of the key process areas.

The team utilized a 3-step approach to arrive to our CSI Program application processing findings. Our approach includes the following four steps:

1. **Gathered information** from kick-off meetings, interviews, PA desk-top procedures, process flowcharts, and general CSI Program forms and handbooks available on the California Go Solar website.
2. Conducted in-person **interviews** with key staff implementing the CSI Program for each of the three Program Administrators, SCE, PG&E, and CCSE. This included application processors, interconnection staff, Project Managers, and consultants. During the interview phase, the following tasks took place:
  - Walk through of the application review process from Reservation Request to Reservation Confirmed for residential and non-residential applications.
  - Review of PowerClerk data entry and validation for residential and non-residential applications.
  - Request of key documents and forms related to specific business processes from interviewees.
3. **Created as-is process maps** for all Program Administrators. Based on information and documents gathered from the interview process, including existing detailed process diagrams, we developed process models to show current PA end-to-end processing activities (from Reservation Request to Incentive Claim). The “as-is” process models highlight information such as major milestones, processing times, data collection medium, and key issues referenced in this report. Activities are broken up into tasks, such as Reservation Request and Incentive Claim with color coding to show whether the task is monitored by the Utility or a consultant. This allows us to highlight the organization differences encountered during the implementation of the CSI program. These maps are provided in Appendix A.



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The processes, systems, organizations and underlying legislative rulings we reviewed are in a continual state of change making a static assessment difficult. While some changes were relatively minor improvements, others being considered would significantly reshape processes and organizational structures. We accommodated these situations by documenting our findings and recommendations based the processes, tools and organizational structures that were in place and operational during our visits. We also attempted to note pending changes under consideration wherever possible.

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## 4. SOLAR CUSTOMER EXPERIENCE

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Below we discuss the solar installation experience that was explored with both solar contractors and recent solar customers, both residential and non-residential. Throughout this section we describe the solar installation process from the customer and contractor perspective, i.e. from a customer's decision to install solar all the way to when a customer receives a monthly net-metering bill. Delving into this experience, one that would happen with or without the program, allowed this evaluation to identify and explore customer issues in the solar installation process that the program is not currently addressing, such as the permitting process and utility rate structures.

### Deciding to Install Solar

The customers we interviewed indicated that the decision-making process was relatively smooth. On average, residential and non-residential customers had been considering solar panels for a few years and decided to take action when they were triggered by a separate event, such as receiving an inheritance or during other construction projects. The CSI incentive coupled with the federal tax credit drove down the cost of the solar installation and therefore did factor into many customers' decisions to adopt solar. However, it is likely that some residential customers would have adopted solar without the CSI program incentive as some express interest and take the first initial steps to install solar, i.e. inquiring about solar with a contractor, without prior knowledge of an incentive. For commercial customers, it appears that the CSI program incentive allowed them to justify solar as a business investment with a quicker rate of return than they would have realized without the incentive.

Only half of the residential customers had heard about the CSI program prior to contacting solar contractors. The other half learned about the CSI program from their contractors. Contractors confirmed this finding, stating that in their experience most residential customers are unaware of the CSI program and contractors tend to educate them about the available incentives. The commercial and public sector customers appear to be more informed about the CSI program prior to contacting solar contractors. Most of these customers had heard about the CSI program through the news, colleagues, utilities and/or consultants.

All customers were motivated to purchase solar panels for two main reasons. The first and primary motivation is financial; most customers are financially motivated to use solar believing it will yield a high return or an additional income stream. Contractors stated that most customers are looking for a return on their investment within 10 years. Customers mentioned that they wanted to save money in the long term and that they considered solar self-generation a financial investment, one that might have a better return than other investment options.

*"I had cash just sitting around and the stock market didn't seem like the place to stick it... We had a second proposal from the person that actually did my system and he crunched the numbers together with the EPBB and the tax credit etc. And the*

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*numbers worked: over a period of time it looked like it was going to be a 13% return on investment.” -Commercial Customer*

The second motivation for installing solar panels is environmental. For the residential sector, customers wanted to reduce their carbon footprint. This was consistent for commercial and public sectors as these sectors were also interested in improving public relations by seeking “green recognition” from the community. While commercial and public sector customers still view solar as a financial investment, they also see solar adoption as a good fit with corporate sustainability initiatives and public relation strategies.

## **Finding and Selecting a Contractor**

Overall, customers did not indicate that it was difficult to find or select a contractor. The process by which customers identify and select solar contractors is extremely diverse. Most customers find contractors from advertisements, referrals and previous construction work. Furthermore, most customers found multiple contractors and received multiple bids before selecting one. However, some customers bypass solar contractors altogether and instead identify the exact solar equipment they want then go directly to the distributor to acquire the panels and hire the distributor’s installers.

Residential customers selected their contractors for a variety of reasons: some selected the contractor with ROI calculations that matched theirs; others selected the contractor that was most local to their areas; and others relied almost exclusively on a referral. Commercial and public sector customers have a more formal and defined selection process, in which many people in the organization are involved. Some organizations have standard bidding processes and selection criteria for all construction-related projects. One organization selected the contractor with the best quality sales presentation.

Regardless of customer sector, referrals appear to be the most common selection criteria. Interestingly, the interviews revealed that customers do not appear to be doing extensive cost comparisons between contractors, nor do customers seem to be selecting contractors based entirely on price, with the exception of the public sector customers who are mandated to put all contractors through a low bidding selection process as part of company policy.

Once a customer decides to go solar, the time it takes to select a contractor varies considerably depending on the customer’s sector. Among residential customers, the process of selecting a contractor averaged about 1 to 2 months; however, they may have been exposed to and influenced by one or more contractors some time previous to making the decision. Among commercial customers, half reported using a contractor they had used for previous work, so the selection time was zero. Sometimes they looked to a general contractor to select solar sub-contractors and were not aware of the details of the sub contractor selection process. The other half of commercial customers did not mention how long it took to select a contractor for a variety of reasons. For example, one commercial respondent said that finding/selecting a contractor had been the task of the company’s CFO. Among customers in the public sector who chose contractors through an open bidding process, the average time to select a contractor was about 4 months. In other instances, public sector customers were not sure how long it took their general contractors to select the solar sub contractors.

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We explored feedback on the Go Solar California website with customers. One way in which the program attempts to educate customers on their solar options is through this website. The customers we interviewed referred to a large variety of sources to collect information on solar panels over the course of several months and in some cases even several years. Customers were able to recall that they referred to online sources for information but were unable to pinpoint exactly which websites. Despite this lack of detailed recall, customers felt they received good information and had enough information to make a decision. Customers also relied upon their contractors for information. Commercial and public sector customers received information from their utilities, consultants, engineers and architects in addition to online information. Only one respondent was able to recall using the Go Solar California website for information. Feedback on the website was generally positive however one customer noted that the website would be more useful if it had a robust search engine to find information specifically for industrial organizations.

## **Equipment Selection Process**

The contractor often selects the equipment that is best suited for a customer based on energy use and roof space. Most customers worked with the contractors to install a system that would get them as close to ‘zeroing out’ their electric bills as possible. In cases where the home or business cannot support a large enough system or where customers lack sufficient upfront cash, the contractors instead design a system that will produce enough energy to knock off the top rate tiers. Customers also made sure that their systems were not over-sized, knowing that they would not get compensated for generating more electricity than they use. The customers felt that contractors were extremely knowledgeable in this area and trusted them to select the most suitable equipment. While most customers relied upon contractors, there were a few exceptions where customers did their own research prior to selecting a contractor, selected the equipment on their own and then found a contractor to install it.

## **Equipment and Installation Warranties**

For program participation, all systems must have a minimum 10-year warranty provided in combinations by the manufacturer and installer to protect the purchaser against defective workmanship, system or component breakdown, or degradation in electrical output. Based on our research, this requirement is effectively enforced by the program as all customers said their equipment (parts) and installation (labor) was under warranty. Warranties ranged from 10 years to 25 years, although customers could not always recall details. Nevertheless, in most cases installation appears to be covered under warranty for 10 years, and in a few instances it is as high as 20 years. Equipment warranties typically range from 15 to 25 years, generally with some differentiation made between inverters (15 to 20 years) and panels (20 to 25 years). Notably, one contractor complained that the program’s warranty requirement is too strict. However, this does not appear to be a pervasive issue in the market given that most customers receive warranties that exceed the program requirement.

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## Calculating the Return on Investment: Making Sense of the Numbers

Finding ways to calculate the potential ROI from installing solar panels does not appear to be a problem area for customers. Customers have the tools and resources they need to make these calculations, either relying upon external resources such as contractors or upon their own mathematical capability. Depth interviews revealed that customers calculate the return on their investment in one of three ways: through online calculators, through their own calculations, or by relying upon the contractor's calculations. Regardless of the method, each customer was equipped with this information while making their purchase decision and did not indicate that this was an issue while making their decision.

## Affording Solar

The CSI incentive is one of multiple ways that customers offset the cost of solar panels. Most often, contractors install the system at a reduced upfront price and then collect the EPBB payment from the program later (this is typically the case for residential customers as they tend to have smaller systems that qualify for the EPBB incentive type, which commercial customers tend to have larger systems that qualify for the PBI incentive type and receive the incentives directly on a monthly basis). The commercial and residential customers are also taking advantage of the federal tax credit to offset the investment. Residential customers indicated that they paid cash for the investment. While many commercial customers financed the cost balance through business loans and public sector customers took advantage of both loans and grants. Most customers we interviewed owned their systems outright, with the exception of one commercial customer that was leasing solar through a power purchasing agreement.

Financing is still necessary to help pay for the high cost of solar, particularly for commercial and public sectors. The solar contractors noted that Power Purchase Agreements and leased equipment are gaining traction in the market. While the customers in this evaluation did not indicate that obtaining financing was an issue, we anticipate that financing approval is a barrier to adoption for many potential customers, especially given the downturn in the economy and subsequent decrease in available funds for business loans. This is likely an issue for the residential sector as well. While the residential customers in this evaluation were able to free up their own funds for the investment, other potential customers may be unable to adopt solar if loans are needed. Furthermore, many residential customers tend to pay for home improvements, such as solar, with home equity. Given the downturn in the economy and subsequent fall in housing prices, many residential customers have seen their home equity lines shrink. This issue should be addressed in future quantitative surveys to potential residential and nonresidential customers. Available financing for solar installation is a frequently stated concern among contractors and could be a large barrier to continued market growth. The CSI program helps to offset the upfront cost of solar but financing is still needed to cover the initial investment and the program is not currently providing any financing assistance.

- Recommendation: The CSI program may consider ways in which it can help finance the entire cost of solar. Assembly Bill 811, which allows customers to finance energy efficiency and renewable generation through property taxes, may be an interesting

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model for the CSI program to consider.<sup>3</sup>

## Permitting Process

Obtaining permits for solar installation was cited by customers as the largest time delay in the process. From the customers' perspectives, permit offices have very little experience with solar leading to time delays while the permit office determines how it will handle and approve the request. Given that solar projects are new to many permit offices, it is possible that this process will quicken naturally over time as permit offices become familiar with working on solar permits and create internal protocols.

*"The city's unfamiliarity with the system as far as permits and things of that nature were concerned was probably the biggest hurdle that we had to jump over in regards to the installation. Just because (the city permitting office) hasn't dealt with the size of the system we have, nor from my experience, have they dealt with very much installation of solar." - Public Sector Customer*

Notably, while inexperience was suggested as the cause of permit approval delays from the customers' perspective, inconsistency is often cited as the cause from the contractors' perspective. Contractors often do not know what to expect from one permit office to another, which causes delays and also project timeline and cost uncertainty. Permit offices are most concerned with how the solar panels meet the jurisdictions' fire code. Furthermore, economic conditions and subsequent layoff have further compounded the problem; recently there have been more permitting delays due to short-staffed departments.

*We have a lot of local customers and not too long ago, just a couple of months back, we were getting permits over the counter basically: we'd drop it off and we'd get the permit that same day. Because our (design lead) is good, we don't usually have a lot of issues, no corrections. (But) now they've had to do a lot of layoffs, they're all backed up. So now it is no longer over the counter (and) we have no idea how long it's going to be. -Solar Contractor*

- **Recommendation:** If CSI program determines that it can and should help to quicken the permit office, the program could help improve this process in several ways. One intervention method that would help permit departments that are unfamiliar with solar permit requests is to develop a solar permit "best practices" protocol. This protocol could be collaboratively developed with input from several permit departments that have a formalized process for issuing solar permits. The protocol could then be available online and shared with inexperienced permit departments with the goal of initially educating them on solar permitting and creating some consistency between permit offices.

## Equipment Installation Process

Equipment installation runs smoothly for most customers. Customers did not cite this step as a cause for project delays or dissatisfaction. Customers feel that the contractors installed

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<sup>3</sup> The recent passage of another Assembly Bill, AB920, may also help. This new bill requires the utilities to compensate a homeowner whose solar array produces more electricity during the year than the customer uses.

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equipment in a reasonable amount of time. From the time the equipment was selected to the time it was installed varied depending on whether the customer was residential or not, and whether other ongoing construction or remodeling processes were proceeding on time. Among residential installations, many systems were usually installed within one month; however at least two took as long as five months due to permitting issues. Generally, following installation, interconnection time was an additional 1 to 3 weeks. Among non-residential customers, it took about 6 months from selection to installation and about 3 weeks longer for interconnection.

Interestingly, some customers mentioned issues with inverters; in a few instances the selected inverters are temporarily unavailable, and in others contractors order the wrong type of inverter and have to re-order a new model. Although this was identified as an issue in the installation process, customers did not feel that the issue was large or caused a long delay. Inverter model or size compliance was often immediately identified and corrected by the contractor during this stage. However, faulty inverters or improperly installed inverters were cited as common issues with system operation. These issues were typically not identified or handled until after the solar systems were operating. We discuss these product and installation issues further in the equipment installation and quality section.

## **Equipment and Installation Quality**

Customer satisfaction with solar PV systems is extremely high. Almost all customers expressed great satisfaction with their systems and are very likely to recommend or have recommended the investment to others. Notably, customers with solar monitoring systems tended to express greater satisfaction with solar as they were better able to understand and measure the amount of energy generated by their investment on an ongoing basis.

*“We’ve had no problem at all. We’re really satisfied. We love it. We love it. It’s minimal maintenance. We have not had ... a single failure of a solar panel as of yet.” - Public Sector Customer*

A few customers experienced problems with their solar systems and did not discover these problems until after the system was up and running. All of these issues originated with faulty inverters or improperly installed inverters. Customers noticed that their solar generation was not as expected after their first monthly bill, contacted their contractors and were able to trace the problem to the inverters in each case. Contractors also recognized issues with inverter quality during our depth interviews. Specifically, one contractor called out quality issues with Zantrax brand inverters and mentioned that other contractors have experienced similar problems with that brand.

- **Recommendation:** It is recommended that the program consider ways to ensure that solar customers receive quality inverters and that contractors install inverters properly. The program may do this in multiple ways: identify poor quality inverters and remove them the list of qualified products for program participation; inspect a sample of projects to identify faulty inverters or improper inverter installation; and/or consider additional training for contractors on how to properly install inverters.



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## Solar Customers' Energy Saving Behavior and Attitudes

From the contractors' experience in the market, solar use generally raises energy efficiency awareness.<sup>4</sup> However, there are instances where solar actually leads to increased energy usage either because customers think that solar now gives them license to increase their energy usage or because customers do not want to generate free energy for their utility company. In fact, our depth interviews revealed a possible correlation between the percent of electric usage generated by solar and energy efficiency behavior that is the opposite of what might be expected given the program's attempt to educate customers on the energy efficiency through the energy efficient audit requirement. Among residential customers that have systems that generate close to 100% of their electric usage, the motivation is extremely high to use as much energy as possible to run the systems at full capacity. Some of these customers implied that having solar energy now negates the need for energy efficiency.

*"(Since installing solar) I have a negligible electrical bill here (even though) we're running two home air conditioners 24 hours a day during the summertime... I know other people (would) say 'well we don't want to have a big electric bill so let's turn the temperature up...' (But) I don't have that kind of fear or concern; we just keep ourselves comfortable and do not worry about the price." –Residential Solar Customer*

Residential customers' motivation to run systems at full capacity stems from their desire to obtain the highest return possible on their investment. Customers do not want any excess bill credits as that would mean that they are generating free energy for their electric utility. If the market changes to a scenario where customers can sell excess power back to the electric company, e.g. AB920 ruling, this attitude toward energy efficiency may change and we would see more customers striving to save energy in order to maximize their profit from solar generation.

Most commercial and public sector customers do not generate anywhere near 100% of their energy usage through their solar panels. Generation ranged from 1% to 200%<sup>5</sup>, with most customers generating about 30% of the electric usage through solar. Many customers were either limited by roof space or were just testing solar as a pilot before installing larger systems to cover a greater percentage of their usage. Commercial and public sector customers still expressed a propensity to save energy in their businesses after installing solar. However their desire to continue energy efficient behavior may be in part because they do not have systems with potential to 'zero out' their energy costs and therefore they were still motivated to take energy efficient actions for financial reasons. Some solar customers have a penchant for environmental protection and will always seek energy

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<sup>4</sup> Contractors also noted that energy efficiency awareness was generally increasing in the marketplace and therefore was not necessarily the result of solar installation and use.

<sup>5</sup> In only one case did a customer's system generate more than 100% of his usage; yet it was an unusual case. The customer's newly constructed building was designed to be super energy efficient; in accordance with LEED principles, it was naturally ventilated and required no heating or air conditioning. As a result, current energy modeling which is based on conventional buildings was not sufficient for the architect who attempted to design a solar system that would cover 80% of energy usage. Instead, the result is that the system generates 200 to 250% of the energy usage.



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efficient opportunities regardless of the financial benefit. These customers indicated that energy efficiency was part of their corporate culture and brand strategy and therefore they would continue to seek energy efficiency improvements if needed.

Commercial and public sector customers with systems that generated close to 100% did express dissatisfaction with potential left over bill credits and wanted to get compensated for the free energy generated for the utility.

*“Creating a market, or selling power back to the utility and getting paid at market rates would guarantee the DEMAND [original emphasis] and would guarantee payment for the investment of a building owner even if tenants vacate. Lending process needs to be more flexible. The utility purchasing the excess power would be a guarantee for the lender.” -Commercial Host Customer*

## Billing and Rate Structures

Customer feedback on monthly electric bills since installing solar systems is quite mixed. Some customers think the bills are straightforward and easy to understand. Other customers, especially large commercial customers, think the bills are extremely complex. With half of the customers feeling overwhelmed by the complexity of their monthly bills, there is evidence to suggest that there is room for improvement in this area.

Beyond general confusion generated by the monthly bills, customers experienced surprises and inaccuracies. Many customers were surprised by the connection fees, expressing that they were unaware that they would be charged connection fees each month. A few customers noticed that they were placed on the wrong rates after receiving their first post-solar bill from the utility. Customers compared their initial calculations with the actual bill and noticed that the bill was completely different from their expectations. Customers called their utilities and were passed around to several people before the utilities recognized that they had placed the customers on the wrong rates (this issue was present among one SCE and one SDG&E customer out of the 19 interviewed).

Contractors specifically described the challenge they face when it comes to rate structures and their implications for solar. Contractors find themselves taking on the role of explaining utility rate structures and options to customers. They use the rates to explain the return on investment scenario and what customers can expect to pay on their monthly bills.

*“Our account executives typically have some level of knowledge that helps them recommend different rates to our customers. It is a challenge though, staying up to date on different rates. It’s a pretty deep analysis issue where we wish that we had someone onboard who really was a numbers person and spent their entire day understanding the rates, understanding what their implications are for solar. Even we just noticed that different types of solar installations can be either advantageous or not based on the rate and what type of financial structure they have set up.” – Solar Contractor*

- **Recommendation:** It is recommended the program find ways to better inform customers of what their utility bill will entail after solar installation. Given that the program does not always have direct interaction with the host customer, this

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information may be best communicated through other departments within the utility, perhaps through the billing, interconnection or tariff departments as those departments have direct interaction with the customer.

- Recommendation: It is recommended that the program educate solar contractors to the extent possible of the rate structures at each utility and what rates are recommended for solar customers.
- Recommendation: It is also recommended that the utilities find ways to better present information on the monthly bills to reduce their perceived complexity. This may warrant further research in this area to identify the sources of confusion and needed changes to the bill. One customer suggested that the bills estimate the expected yearly true up each month so there are no surprises at the end of the year.
- Recommendation: Given that customers are being placed on the wrong rates in some cases, it is recommended that the program encourage the utilities to develop a system of checks and balances to ensure that new solar customers are placed on the right rates. Perhaps better communication between program administrators and the tariff departments would help avoid these errors.

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## 5. PROGRAM ADMINISTRATOR OPERATIONS & PARTICIPATION EXPERIENCE

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This section explores program requirements, activities, operations, organizational structure and internal data systems in an effort to assess program implementation, from the applicant and Program Administrator perspective. Overall, based on our interviews with host customers, contractors and the PAs, participants are satisfied with the CSI Program. Although they consider the level of paperwork and interaction with CSI/ utility bureaucracy to be time-consuming and cumbersome at times, they are aware that all PAs have made consistent effort to improve the program and believe the program is a valuable part of the solar industry. All contractors believe that the PAs have gotten better and quicker with processing paperwork and the recent change to allow contractors to submit electronic copies without a ‘wet signature’ is perceived as a huge step forward. This section focuses on any mid-course changes that the program might consider in order to streamline current activities, reduce application through-put time and increase participant satisfaction. Throughout this section we draw from our analysis of the through-put process maps located in Appendix A and our depth interviews.

### PA Organizational Structure – Roles and Responsibilities

#### *Internal staffing versus out-sourcing*

All three utilities utilize external consultants to complete a portion of the CSI application process. PG&E performs all tasks internally with the exception of solar equipment inspections. Inspections are contracted out by necessity due to the size of the territory PG&E covers. CCSE is a non-profit agency contracted by SDG&E and by definition processes all applications using external (CCSE) staff. SCE uses a mix of internal resource and external consultants. Internal SCE employees complete initial application reviews and then pass the applications on to external consultants who perform a “technical review”; much in the same way that PG&E “Application Processing Staff” performs the initial application review and passes it on to “Project Managers” for final review. However, SCE also has the same external “technical review” consultants perform site solar inspections.

Our evaluation discovered that SCE is duplicating some efforts between its internal staff and its outsourced staff. The reservation request and incentive claim applications are being reviewed twice; once by SCE personnel and again by a third-party consultant (Technical Review Team). When a reservation request or incentive claim application arrives, SCE personnel check the application for completeness and then pass it on to an external consulting firm. This firm then re-checks the same information and also performs a “technical” review.

- Recommendation: SCE should have the application checked only once. A determination should be made whether this is best handled internally or externally. We believe that this fix will greatly help reduce the application backlog we witnessed

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at SCE. *NOTE: Following our meeting, SCE took quick action to bring the application processing activities for residential applications in-house; with plans to migrate the more difficult non-residential applications in-house after approximately one month (due to learning curve). Although SCE has had some initial challenges as a result of implementing a new process very rapidly, we encourage them to continue with their efforts at a diligent but sensible pace.*

When utilities hire third-parties to process applications, these providers are not permitted to access the utilities' systems to validate information such as customer address or meter numbers. At SDGE, access is granted to the contractor provided this contractor completes a signed voucher for each account that they process; adding to the already large volume of project paperwork and processing time.

- **Recommendation:** Utilities that utilize third-party providers should provide them with access rights to the data required to perform their job. Contractors should be permitted to sign a one-time affidavit that grants them and their employees' rights to access only the customer data that they need to perform their job.

### ***Breadth of responsibilities***

The biggest surprise we uncovered is that CCSE resources are assigned full end-to-end responsibility for their assigned program participants. They process applications, perform detailed analysis ("technical review" or project manager tasks at SCE or PG&E) and also perform on-site inspections. Each CSI processor personally handles their assigned applications from the initial reservation request stages through incentive approval. This approach instills a sense of project ownership with the CSI processors and, based on their feedback, gives them a chance to do something more challenging and exciting than just processing applications. The staff we spoke with liked going into the field to conduct inspections, meeting customers and contractors in-person and indicated this is what made the job fulfilling and rewarding for them. It is noteworthy is the relatively small size of this territory, making this model more challenging (though not impossible) to replicate in other areas.

The breadth of roles at PG&E and SCE are by comparison much narrower and focused; resulting in more "hand-offs" and the increased need for greater communication, coordination and documentation between team members. While territory size and application volume may justify a different organization approach, SCE and PG&E may want to consider which pieces of the CCSE model can be adopted.

### ***Work assignment- residential versus non-residential***

Both PG&E and CCSE split assignments of solar application processing work to their staff by residential and non-residential applications. This is necessitated partly because non-residential applications have additional process steps, are more complex and slower to process. PG&E recently began moving toward a process whereby residential processors are being assigned some commercial application depending upon the day's volume. SCE did not differentiate work assignments by the type of project.

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## Customer Service: Servicing Applicants and Host Customers

The CSI application process deals solely with the processing of incentives, yet to implement a solar system, customers must interface with other departments at the utility (e.g. Interconnect) and complete separate applications or requests that often include much of the same data that was already provided to another department. One central theme that emerged from our depth interviews was customers' and contractors' frustration with dealing with several disjointed departments (interconnection, billing, tariff, and CSI program staff) to install solar and/or receive the incentive. Frustration was also felt when dealing with program staff; for example, paperwork was lost or the applicant spoke with a different person each time. Contractor interviews echoed this frustration with dealing with multiple personnel at some PAs. Contractors said it was possible to talk to just one person throughout a project at PG&E and CCSE, however SCE was less personal.

When customers were asked to identify one area of improvement, customers from each PA mentioned that they would like to have one, central person or telephone number to call to answer all questions about the program and anything else pertaining to their solar installation, including issues with interconnection, rates or bills. Assigning one account representative to a given project allows for a more efficient and timely participation process.

All three PAs demonstrated a desire to maintain and improve relationships with their customers, yet each PA had different methods and ideas for how to achieve this. Our observations are as follows:

**CCSE:** CCSE appeared to have a very strong connection with customers. The culture and atmosphere was noticeably "upbeat" and energetic. Because each applicant was assigned one CSI coordinator to work with, there was what appeared to be a strong understanding of the applicants' issues and concerns. This provided an opportunity to develop close one-on-one relationships between CSI coordinators and applicants and also the chance to provide meaningful assistance and education in working through the nuances associated with program participation.

**SCE:** The SCE organization is more formal in nature than CCSE; however it is also beginning a pilot which will radically change their process and approach. If successful, this should have very positive results on customer care. SCE's pilot approach considers the customer care cycle from the time an application comes in right through helping the solar customer interpret their bill months after solar is installed. Because the solar installation out of necessity requires the involvement of many different people, SCE is looking to assign a central "coordinator" for each solar project to act as a single point of contact to the solar installer and customer. This will avoid the customer having to navigate the often confusing maze of a large organization. Unlike the CCSE model, many different organizational "hand-offs" will still occur, however, the end-to-end scope of processes covered by this approach far exceeds what has been discussed elsewhere and is a very encouraging albeit ambitious approach that should improve customer care significantly. The approach will likely not get the CSI team as directly involved with customers as the CCSE approach; however, they will be able to cover a far broader range of services and departments with this approach.

**PG&E:** While there were discussions about organizational adjustments that may take place,

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details were not available. Also it was not clear that any were aimed at improvements in customer service.

- Recommendation: Each PA should determine whether they can assign a representative to each applicant for the entire duration of the program participation process, much like the CCSE model.
- Recommendation: The program should also explore whether a representative can be assigned to each solar project for the entire solar adoption process, including both program participation and utility interaction. The program should consider assigning a single customer liaison to handle a customer's solar project from time of initial interest/application through reconciliation of customer billings after the installation is up and running. *NOTE: SCE has plans to pilot this approach in early 2010. Their progress should be monitored and lessons learned from this could be transferred to the other utilities.*
- Recommendation: We recommend that the program investigate ways to provide a single point of entry for all data that is entered, possibly during the reservation request phase with a view toward automating the data feed from the CSI application process to other departments such as interconnect.

When questions or issues with applications are uncovered, the teams we met with indicated a preference for communicating issues with customers via mail or email versus trying to resolve issues via telephone. In one example, we observed the review of a reservation request for a customer implementing a 42 kilowatt system however the application indicated that the system being implemented was 42 megawatts. The application was rejected and a formal letter was sent to the customer. Upon further query, the person we observed indicated that they were being measured by how many applications they could process in a given day and that taking the time to call customers would “slow them down and cause them to miss their performance target for completing applications in a timely manner”. Rejecting the application in effect “stopped the clock” and had the effect of improving the metric that measured application processing time but sacrificed customer service and progress toward the program's overall MW goal.

- Recommendation: Whenever possible, attempts should be made to contact the applicant by telephone directly to correct any errors. In the example above, it was fairly obvious that the error was likely typographical in nature and could have been easily cleared up with a simple call. This would have resulted in better customer service and also saved the time required to mail a letter and the time required by both the customer and the PA staff to “double handle” the same application.
- Recommendation: PA performance metrics should be reviewed and administered to ensure that customer service is a top priority.

Contractors also expressed a need to receive more advanced notice of program changes, especially EPBB calculator changes. For some contractors, several weeks can span between the time they print the calculator output to the time they submit the paperwork to the PA. If contractors use an outdated version of the EPBB calculator for an application, the program does not accept it and the contractor has to complete it again and get another signature from the customer.



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Contractors further expressed a need to receive notification of upcoming incentive changes. The program currently lets the market know where the incentive steps are through a website, (<http://www.csi-trigger.com/>), but not actually when the incentives will change. As it is now, contractors have to guess when the incentive is going to drop.

- **Recommendation:** It is recommended that the each PA provide an estimated date for when the next incentive drop will occur on the trigger tracker website. It is also recommended that the program proactively notify contractors 45 days in advance of upcoming incentive step changes and 30 days in advance of EPBB calculator changes.

## **Application Processing in PowerClerk**

Customers most often submit program applications in PowerClerk, the web-based software application designed to manage and track solar applications and incentive programs. Currently, an Applicant's incentive is reserved by submitting project data in PowerClerk and also submitting required forms in hardcopy, including the Reservation Request Form (RRF) generated in PowerClerk. The Applicant also has the option to submit required information independent of PowerClerk, using an Excel version of the RRF. Regardless of the whether the Applicant uses PowerClerk; the submittal is only acknowledged by the PA when it is received in hardcopy. There is a program-wide goal to completely automate the process in January 2010, allowing Applicants to complete submittals electronically through PowerClerk and upload attachments. If the Applicant chooses to utilize this option, there will be no need to also send a hardcopy of the application. With the exception of PG&E, funds are only reserved when a complete application is received.

Once an application is submitted in PowerClerk, users cannot access that application to correct errors or make other adjustments on-line. If an application is suspended, the PA must contact the PowerClerk vendor and get permission to change the applications status. In some instances, the customer is forced to re-submit the entire application via hard-copy (which is very cumbersome and time consuming for the customer and PA staff). One example provided described a customer whose application was rejected because the price did not appear correctly on the application. In reality the data was correct but was just not interpreted correctly. The Customer was forced to re-submit the entire application manually which took unnecessary time and effort.

- **Recommendation:** Specifically at SCE, SCE's overall company attachment size limitations make emailing attachments difficult. Attachment size limit on emails is unknown and emails can get rejected due to attachment size issues. Applicants must re-size attachments and "guess" at correct size before re-submitting. We recommend that PowerClerk be upgraded to allow an application to be modified and corrected online by the customer. An audit trail capability should be provided to track changes.

Program-wide, when applicants email documents with attachments to the PAs, they do not receive confirmation that all of their attachments were received. This can cause applications to be rejected later in the cycle with no warning to the customer.

- **Recommendation:** Providing the ability to electronically attach and track CSI application documents and supporting materials in PowerClerk should largely

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eliminate the need for customers to receive confirmation that their attachments were received. The enhancement is planned to be available in Q1 2010. Until this new PowerClerk ability is made available, we recommend sending customers / installers an email confirming receipt of documents and forms.

From the PA perspective, PowerClerk appears to perform adequately although there were some complaints at PG&E about response times. The CPUC is working continuously with the software vendor to upgrade the software and add additional capabilities. In Q1, 2010, capabilities such as the ability to electronically load data into PowerClerk from major solar supplier systems along with the ability to electronically attach forms and paperwork to an application will be made available. While not perfect, PowerClerk appears to support the needs of the CSI program.

The PAs are using PowerClerk to process applications but each utility has its own internal software applications (billing, interconnect, payment, customer usage history, etc.). Currently, the PAs manually validate data that is entered into a Reservation Request Form or Incentive Claim Form (ICF). Examples include customer account number, address, contractor license, equipment certification and ratings, etc. Although this does not take a lot of time to do, when multiplied by the volume of applications processed, the time can be significant.

- **Recommendation:** The validation being performed for RRF and ICF's is relatively simple, but could be easily automated. Enhancements to PowerClerk to perform such validation should be investigated. For example, a list of certified contractors could be imported periodically into PowerClerk and used to automatically validate a contractor license status. There may be an opportunity to automatically validate information on the application (contractor license, meter #, address) however this should be balanced against the life expectancy of the program versus the cost of automation.

Currently, SCE staff scans application documents and provides them to third-party contractors that process applications off-site.

- **Recommendation:** If PowerClerk capability is enhanced to allow electronic document attachments, the extra step of scanning applications should be eliminated. If PowerClerk is not enhanced to allow document attachments and SCE consolidates application processing either in-house or with a third-party provider, the scanning of application forms should be reviewed to either provide full electronic document storage (and recover much-needed space currently occupied by paper records) or eliminated to reduce work effort expended scanning documents.

## **Reservation Request and Incentive Claim Application Processing**

The Program Administrators have two major processing activities, processing reservation requests and processing incentive claims. The table below shows the percentage of reservations and incentive claims that are processed within 30 days at each PA.



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**Table 3. Reservation and Incentive Claim Processing<sup>6</sup>**

	PG&E	SCE	CCSE
Reservation Processing (% processed in 30 days or less)	58%	60%	79%
Incentive Claim Processing (% processed in 30 days or less)	36%	31%	52%

While the Program Administrators are doing an excellent job of getting many reservations and incentive claim forms processed within 30 days, there is still vast room for improvement, especially with incentive claim processing. In an effort to get more applications through each process within 30 days, the program may consider a multitude of changes that mentioned below.

One major cause of delay in processing reservation request and incentive claims is the lack of required information when applications are submitted. There are several forms required by an applicant during the application process, as noted in Appendix B. In general, the forms required are consistent amongst all three utilities. Exceptions to this are the Energy Efficiency Audit and the Interconnection Application. A table indicating all required forms by each utility for each phase of the process is provided in Appendix B. This table also highlights any differences that may exist. Overall, we found that common issues are duplicative fields between forms and that some required forms are not necessary for solar installation. This increases the chance of Applicants providing incorrect and incomplete information. Examples of this include information in the incentive claim form package that often does not match information in the reservation request, missing PMRS documentation, and Applicants incorrectly completing the Energy Efficiency Disclosure Form and Energy Efficiency Audit. Below we describe some issues that have arisen when Applicants submit applications and suggest recommendations for the program to consider. Notably, most of these recommendations are intended to shorten the time it takes to process reservation requests and incentive claims. However, we also call out recommendations that may increase customer satisfaction.

### ***Reservation Request: Energy Efficiency Audit and Disclosure Form***

CSI program theory assumes that making a home or business energy efficient is an essential first step prior to installing solar. To encourage customers to take energy efficient actions before installing solar, the program requires customers to complete an energy efficiency audit through the customers' utilities. This step must be completed and verified before a customer's incentive amount is reserved. The energy efficiency audit, which is different at every utility, focuses on energy efficiency and offers generalized recommendations on how consumers can save energy by implementing various energy conservation projects.

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<sup>6</sup> Source: CSI CPUC Staff Progress Report, January 2009. Data reflect all applications processed in 2008 combining residential and non-residential applications and application with and without an inspection.

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The Energy Efficiency Disclosure is a form that the Applicant must complete to confirm that they have done an energy audit and have considered the recommended energy efficiency measures. The Applicant must initial several statements on the disclosure form to demonstrate this. Both the disclosure form and the energy audit are required to reserve funds; however the information on the forms is not verified by the CSI application processors. Often, this paperwork is missing entirely from submittals, or the Energy Efficiency Audit is not appropriately initialed (blanks or check marks are not acceptable). The SCE Energy Efficiency audit, for example, requires applicants to sign or initial their responses to each question in a list; even if the question is left blank. If any signature or initials on a question is left blank, the application will be rejected.

Our depth interview findings indicate that this step may not be necessary for most solar customers as many of them think they are already energy efficient or are so motivated to get solar panels that they will not listen to energy efficiency alternatives. Therefore, it is viewed by most customers and contractors as a waste of time. Most solar customers believe their homes and businesses are already energy efficient and they do not need this step. Although this requirement is in place to encourage energy efficiency, it seems that most solar purchasers have already taken the steps to improve energy efficiency in their homes or businesses. Most of the commercial and public sector customers were exempt from the audit requirement, meaning their businesses were already energy efficient as they had already completed an audit within the past three years, had proof of Title 24 compliance, or had other energy efficiency certifications such as LEED or ENERGY STAR. Furthermore, solar customers are asked to complete this Energy Efficiency Audit and the Energy Efficiency Disclosure form at a stage in the solar energy decision making process when the customer has already made a decision to implement a solar project, has likely paid a deposit to a contractor and has signed an installation contract. It is highly unlikely that an applicant at this late stage in the solar decision making process will change their mind.

Residential customers are required to complete an energy audit and do not have exceptions. Interestingly, only half of the residential customers we interviewed recalled completing an energy audit. Among those who did recall completing one, most were disappointed, believing the information was useless because it was too broad and did not apply to their particular homes well enough. These customers did not take any actions to reduce energy usage because of the audit process. Only one residential customer believed the audit process was useful stating that through it he realized that changing some major gas appliances to electric was a good way to maximize his solar investment (i.e., 'netting zero'). Overall, most residential customers do not think the audit information they received was valuable.

*"(My contractor) had me go on the PG&E website ...and I went through that questionnaire. I did not (find it useful). I found it kind of unrealistic. It came out with some things that just didn't match; in answering the questions, it just didn't match what was real." - Residential Customer*

Since host customers often rely upon their solar contractor to facilitate and fulfill all of the program requirements, the audit requirement puts contractors in a position to sell energy efficiency at the same time they are trying to sell solar.

*"The problem that I see with combining energy efficiency with solar is that people tend to get bogged down with too much (information). And if they*

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*come to you wanting solar and you redirect them to energy efficiency too much they tend to either just put in new light bulbs or not do anything at all; (promoting energy efficiency at the same time as selling solar systems is) too much hassle.” –Solar Contractor*

Therefore, the program puts contractors in a challenging position because if they really try to encourage energy efficiency improvements prior to solar installation, then contractors risk losing the customer and the program risks losing an opportunity that would get it closer to achieving its MW goal.

- **Recommendation:** Given that the energy audit step appears to be unnecessary and/or ineffective, it is recommended that the program either reconsider whether this step should be a requirement for program participation or reconsider how energy efficiency can be better encouraged through the program.
- **Recommendation:** If the Energy Efficiency Audit requirement is not removed, the audit should be standardized across all three utilities and re-written to include alternative energy options and provide more useful and prioritized customer-specific recommendations about which options would be most effective in reducing energy consumption and lowering monthly expenses in their specific circumstances (energy efficiency projects (and which ones), solar, wind, etc.). Also, if the Energy Audit is not removed, an alternative to having applicants sign or initial multiple questions is to have them sign an acknowledgement that they have been informed about energy efficiency options and understand that these options may be more cost-effective first steps for them to take before embarking on a solar energy implementation.

### ***Reservation Request: CSI Handbook Recognition***

As part of the reservation request step, host customers are required to sign an affidavit asserting that they have read a 100+ page solar handbook. In reality, it is unlikely that any customers read this book. They most likely sign the affidavit just to get through the process. If the affidavit signature is not provided, the application is rejected.

- **Recommendation:** We recommend that the requirement to read the solar handbook be removed. It appears to be an unnecessary step that adds questionable to the application process. Removing this requirement would help streamline the application process for customers, eliminate one more item to be checked by application processors and eliminate another item that could cause an application to be rejected and delayed.

### ***Reservation Request: Application Fee***

Application fees for non-residential applications are often returned to the host instead of the contractor. The fees for non-residential applications are, by default, returned to the customer of the system unless a payment assignment form is completed. More than ninety percent of the time, the contractor has paid the application fee. If the payment assignment form is not completed, the contractor sometimes has difficulty collecting the fee from the customer. This is particularly the case at PG&E as CCSE and SCE accept a signed letter to allow for the contractor to receive the fee instead of the customer.

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- **Recommendation:** PG&E should allow the rebate application fee to be returned to the contractor instead of the host customer, possibly using the same letter approach that CCSE and SCE do. However, the program could also rectify this issue statewide by changing default to be that application fee gets returned to same party that sent it originally.

### ***Reservation Request: Tax Exempt Status Certification***

When government agencies apply for CSI funds, they must provide a tax exemption certificate. Such a document is typically not provided to government agencies leaving them in a catch-22 situation because they cannot provide a document that is not available to them.

- **Recommendation:** The requirement for a government agency to provide a tax exempt certificate as part of their application package should be removed. This will eliminate unnecessary inefficiency caused by agencies seeking to satisfy this requirement or expend time seeking ways to obtain a waiver or other suitable substitute.

### ***Reservation Request: Public Sector Delays***

Due in large part to the current economic climate, public sector solar projects are increasingly being delayed due to delays in project funding. Application processing time for public sector projects is often exceeding the 60 day limit yet funds are reserved and it is tying up CSI funding.

- **Recommendation:** We recommend that the program study the degree of the public sector delay issue and seek solutions for handling this issue.

### ***Incentive Claim: PMRS Requirement***

As part of the CSI application, all customers applying for the Expected Performance Based Buy-Down (EPBB) must include a quote from a Performance Based Monitoring Service identifying the cost of implementing a monitoring program. Under current CSI program rules, if the cost of this monitoring service (typically about \$1,000) exceeds 1% of the cost of implementing a solar system (and it nearly always does), a performance monitoring service will not be required as part of the installation. Given the choice, well over 90% of customers opt not to purchase a monitoring service unless required to do so. This leaves monitoring services with the unfortunate burden of being asked to provide customer quotes with a very low likelihood of making a sale. This has become so burdensome that some solar monitoring services are refusing to provide customers with service and equipment quotes. In response, a common practice in some areas is for solar contractors to photocopy old quotations just so that the mandatory requirements of the CSI application can be fulfilled.

- **Recommendation:** It is recommended that the program either eliminate the 1% cap clause so that all participants must have a monitoring service or eliminate the quotation requirement. Since eliminating the requirement has negative implications for collecting the data necessary for an impact evaluation, the program may choose to require the monitoring service of all program participants regardless of system cost. In this case, the program should consider ways to help offset the cost of the

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monitoring service so it is not a barrier to solar adoption.

### ***Incentive Claim: System Sizing***

The program has several tools and requirements in place to ensure that systems are properly designed. The system design data is required both to ensure quality systems in the market place and also to accurately secure and pay the incentives for solar projects. Contractors noted that the current shading methodology used to secure the exact rebate amount is too stringent and often results in a full site evaluation. Minimal shading is a height and length measurement for the distance of treetops and structures. Contractors think it is unfair because it does not factor in orientation and latitude across the state. Small changes that often justifiably occur between the start and end of a job can result in different calculations. These differences consume a lot of resources and they often result in very minor adjustments in the rebate amount. Contractors suggested that if the program redefines “minimal shading” based on 90% availability and/or establish an allowance (e.g. 10%) for going over the design production then many delays would be rectified.

- ***Recommendation:*** Establish an allowance (e.g. 10%) for going over the design production so paperwork does not have to be redone. Redefine minimal shading based on 90% availability.

Furthermore, if a customer applies for an incentive payment for a solar system that is oversized for their needs, the program will reject the application unless just cause can be provided (e.g. customer is expanding their building or adding a pool). If the overall program goal is to increase solar energy production, it is not clear why such a restriction would be put in place (as excess energy flows back to the grid), provided the customer acknowledges that the system is larger than their needs.

- ***Recommendation:*** In the interest of encouraging greater solar energy generation, the system size limitation restriction should be removed. If this is not possible, a suitable compromise may be to require the customer to sign a statement of understanding attesting to their knowledge and consent to installation of an oversized system. The “fix” appears to be easy to implement operationally but the time to agree to such a decision may be more difficult. The number of customers with the interest and capacity to install oversized systems is likely low, hence this recommendation would likely have a low impact on overall processing time and customer satisfaction. *Note: The program may consider how recent legislation, AB920, might influence program requirement changes.*

### ***Incentive Claim: Interconnection***

System interconnection is a necessary step in the solar installation process regardless of program participation. The program does require proof of interconnection before releasing an incentive payment. The program also describes the interconnection step in the program handbook and during trainings. Our depth interviews revealed that the interconnection process is a major cause of delay for customers that are applying directly to the program but is not typically a delay when contractors apply to the program. When contractors handle the interconnection step, it seems seamless and timely from the customers’ perspectives. Contractors are very familiar with this step and know the right time in the project to contact

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the interconnection department and start the interconnection process. However, when customers directly handle the interconnection step, the process seems to take much longer than customers expect. Customers felt that CSI program information implied that interconnection would be a simple and quick step, one that should be initiated immediately after the system is installed. Instead, most contractors approach interconnection as a parallel step that occurs earlier (i.e., during installation or at the same time that they submit the reservation request form) as opposed to a serial one that follows installation. As a result, customers who have contractors handle the interconnection issue experience a short window between installation and interconnection.

- Recommendation: Given the lack of knowledge regarding the length of time it takes to complete the interconnection process, we recommend that the program better inform customers that intend to contact the interconnection department directly of the expected time it takes to complete this step and suggest the best time during the project to initiate this process, perhaps a week prior to the scheduled installation date. Alternatively, the program could encourage customers to handle the interconnection step through their solar contractor.

Overall, contractors expressed great satisfaction with each interconnection department. Contractors only had issue with how paperwork is submitted to interconnection departments, noting that electronic submission would be easier and timelier at all three utilities.

- Recommendation: Electronic forms are a more efficient method to submit paperwork to interconnection departments. The program should encourage interconnection departments to move away from mail-in hard copies to the extent possible.

However, there appears to be a large amount of inconsistency in the level of customer service provided by PG&E and SCE's interconnection departments. Some PG&E and SCE customers expressed major dissatisfaction with the interconnection departments' customer service; while other customers were extremely satisfied with the PG&E and SCE's interconnection departments. Dissatisfied customers mentioned that the interconnection staff was unpleasant, missed scheduled meetings, and tended to pass blame along to other employees. More importantly, customers were led to believe that little communication and coordination took place between the CSI program administrators and the interconnection staff.

*"I'd point out and make it clear that the interconnection part of it is separate from the solar initiative part of it and that those two entities are ships in the night. They do not know one another; they do not speak to one another, and they have no knowledge of what the other one is doing." - Public Sector Customer*

In one case, the interconnection department declined to send out its staff because it was viewing older utility records which stated the presence of a dog; meanwhile, the dog's recent death had been listed on newer program records. Because the records did not agree, the interconnection department took the precaution of calling the contractor to receive clarification. As a result, the interconnection process was delayed.

- Recommendation: Given the customer service issues surrounding the



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interconnection department, it is recommended that the CSI program administrators better communicate and coordinate with the interconnection departments by making project information transparent and easily accessible for the interconnection staff. Further research into how the two parties are communicating within each IOU territory is likely warranted to truly understand how these two parties can better work together as one seamless team from the customer's perspective.

Operationally, the interconnection department at each utility and the CSI inspection team at each PA schedule and visit solar installation sites. Each goes with a different purpose. interconnect is primarily interested in safety issues surrounding the inverter and the tie in of the solar system into the power grid. The CSI team is focused on the efficiency and effectiveness of the solar installation (azimuth, tilt, shading, etc.). This costs the utility in excess labor, extra mileage & vehicle wear, extra administrative resources to perform appointment scheduling and can also cause similar inefficiencies to the customer and installer.

- **Recommendation:** Given that solar installation sites are often inspected at least twice, once by the Interconnect team and again by the CSI solar inspection team, we suggest investigating the possibility of having the interconnect team also verify solar panel installation. This would reduce travel time, mileage, labor costs etc.

After analyzing the forms required at each utility, we found that the Indemnification clauses for the solar application and interconnection at SCE are different and onerous causing some potential customers to be hesitant to sign.

- **Recommendation:** We recommend that SCE adopt a single Indemnification clause, following the examples already in place at PG&E and CCSE. We understand that recent attempts have been made to do so, but were resisted by the legal department. We recommend that the legal department at SCE meet with legal representatives from PG&E and SDGE to review concerns and agree on common language, if possible.

## ***Incentive Payment***

Contractors typically reduce the final price of solar projects that qualify for the EPBB incentive type. Customers see this price reduction on their bill from the contractor. The contractor then receives and processes the EPBB incentive check. Therefore, most customers who have contractors apply on their behalf for the CSI program never actually see the EPBB incentive check, because the contractor has 'carried the rebate for the customer'. PBI payments typically go directly to the host customer with the exception of customers that participate in a Power Purchasing Agreement. Among customers that received incentive checks, regardless of the incentive type, the payment process and timing was satisfactory. However, customers and contractors did express dissatisfaction with the lack of information on both PBI and EPBB incentive checks.

*"For PBI payments, the fact that there isn't a statement of kilowatt hours produced or any kind of information about what data lies behind the amount on the PBI payment on the check, is very confusing to clients. This is especially true for clients who are the system owners for more than one*

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*project; they often have no idea which system the check is for. Individual customers are tracking their usage really closely and they'll say 'How can I be sure that this check is the right amount?'... It's not an invoice; it's just a check stub. For some companies, they might be so large that the check might come in and go to their accounting department and the accounting people have no idea what it's for." - Solar Contractor*

Incentive checks do not include the project location, information that is particularly useful for commercial and public sector customers who might have installed solar panels at several different locations. Furthermore, the payments appear to lack clear information indicating that the check is part of the CSI program.

- **Recommendation:** Given the confusion and dissatisfaction with regard to incentive payment, it is recommended that the program consider adding some information to incentive payments to include, at minimum, language that clarifies this incentive is part of the CSI program and the physical address at which the solar panels were installed.

It appears that SCE's payment processing time is longer than that of the other utilities. One reason may be the relatively low dollar approval thresholds in place at SCE. At all PAs incentive payments over \$50,000 require senior approval. This can take an inordinate amount of time to track and process.

- **Recommendation:** We recommend that the metric surrounding payment processing time be re-evaluated along with the reasonableness of the payment approval thresholds. Also, SCE may want to look at automated ways to track approvals using workflow tools that are readily available on the market. Once agreement on payment thresholds is reached, we believe that the implementation itself can be completed rapidly. *Note: SCE has made adjustments to the metrics used in their payment processing time to align with those in place at CCSE and PG&E.*

## **Program Training**

Each PA offers some form of training for solar contractors on how to participate in the program in addition to information in the program handbook, newsletters, and direct emails. From the PAs perspective, the training programs being offered at all three PA locations are well attended.

Contractors generally find the program information sources very valuable and informative. Among the program information sources, contractors find the trainings especially useful and informative. Notably, this high level of satisfaction is felt by contractors with a large amount of experience with the program and it is likely that program satisfaction varies depending on the level of program experience. The trainings are offered in multiple mediums, in-person and web seminars, to allow for several participation opportunities. This is especially appreciated by contractors given their busy schedules and the mobile nature of their trade.

*"I go to every CSI forum that's available. If I can't make it there in person there's always one that is available through web seminar that I follow along... It's always good to get a refresher even if there isn't new information that's being pushed out. I think they do a really good job as it is right now. ...They*



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*allow for people to join online, they're able to see the same slides as the people inside the auditorium. They field questions appropriately." – Solar Contractor*

- Recommendation: Notably, one contractor suggested that the program try to post audio files with the presentation slides after a contractor training/forum. Many training sessions are now also being offered on the web to allow contractors to attend at their convenience. These offerings should be expanded, especially in larger service areas.

## **Tiered Incentive Structure**

The program currently has a tiered incentive structure based on the number of installations. It is questionable whether the market will still participate in the program at lower incentive rates. Therefore, while the tiered structure may be an effective exit strategy for the market, it may also keep the program from reaching its goal. As the incentive is reduced, contractors may no longer apply for incentives under the current 2-step process because they believe the administrative costs to receive an incentive will be higher than the incentive payment.

*"We still have a lot of paperwork that has to be done for the program and when we look at our internal costs and at steps 8, 9 and 10, I don't think I would apply for the rebate. Because I don't think that the administrative costs justify the money we would be getting." Solar Contractor*

If the contractor can continue to sell projects without the smaller incentive, then this may not be an issue. However, if there is a drop in installations overall (both within and outside of CSI), then this could be difficult for the purpose of the program.

A pilot program at SCE is the result of an extensive internal process review which concluded that it may be more effective to delay incentive applications from being accepted until after the solar application is complete. This radical departure from current practice has a number of benefits:

1. Avoids correction of discrepancies between data submitted at time of application; time and later modified at installation time;
2. Significantly shortens the processing time and manpower requirements;
3. Avoids the process of reserving funds (and associated discrepancies);
4. Avoids need to track project milestones (for non-residential projects);
5. Avoids holding up reserved incentive funds when projects are delayed; and
6. Reduces administrator costs for solar contractors.

The risk is that customers would need to commit to a solar system and install it before they know how much they'll get back in rebates (because triggers may have been reached between the times that the project was initiated and completed. According to all PAs, the dollar difference between various trigger levels as a percentage of total project costs is relatively low so this should not present a major concern.

- Recommendation: The program should consider ways to make the participation process much shorter and instead use a one-step process as the incentive cost is

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reduced so they can continue to meet their goal.

## **Perceived Impact of CSI Program on the Solar Market**

We asked contractors for their insight into how the market has changed since the influx of solar incentives offered by the CSI program. Contractors noted that they have experienced several positive market changes since the CSI program started. Contractors' businesses have grown both in terms of the number of employees and the number of customers. One contractor said that business has doubled since the CSI program. While half of the customers we interviewed were unaware of the program prior to initiating their solar project, contractors claim to have seen an increase in the market's solar awareness and knowledge in general. At this point, it is uncertain as to whether the market's knowledge increase is due to the program but in all likelihood it is at least in part due to the program.

*"When we first started our company in 1997 there was so much education (we had to do) because nobody knew about solar. They thought you were talking about solar hot water. (We do) a lot less (education) now. People are more aware of solar and some people have heard of the rebates and some people haven't. We've got customers who've looked into it and figured out all their own stuff and run the tracker themselves." – Solar Contractor*

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## 6. CONCLUSIONS AND INTERIM RECOMMENDATIONS

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To date, the program has been very popular and well received as evidenced by the fact that most utility territories are already on incentive step 5 or 6 despite the program just approaching its third year of operation. This popular incentive program is very active and fluid, undergoing frequent and sometimes significant changes. Overall, customers are very satisfied with their PV systems and contractors indicate their businesses have grown in terms of the number of employees and number of customers since the program's inception. Further, participants are highly satisfied with the CSI Program and the Program Administrators thus far, although they consider the level of paperwork and interaction with CSI/ utility bureaucracy to be time-consuming and cumbersome at times. Contractors recognize and appreciate that all PAs have made consistent effort to improve the program and believe the program is a valuable part of the solar industry. We note that process evaluations, by their very nature, provide areas of improvement. The number of early recommendations herein should not be construed as an indication of the overall quality of the program.

The findings from this research produced early recommendations for the program. These early recommendations identify potential areas of further exploration. These recommendations are summarized below. Each recommendation is also categorized into how it would affect the program. The legend below outlines each recommendation type.

### Legend:

▲ Change process

◇ Change program requirements

★ Educate

■ Create new process

### To improve the Program Administrators' application processing time, we recommend that:

- The program eliminate the 1% cap clause so that all participants must have a monitoring service, and consider ways to help offset the cost of the monitoring service so it is not a barrier to solar adoption. (◇)
- The program may consider whether the energy efficiency audit step should be standardized across all three utilities and re-written to include alternative energy options and provide more useful and prioritized customer-specific recommendations about which options would be most effective. Furthermore, an alternative to having applicants sign or initial multiple questions is to have them sign an acknowledgement that they have been informed about energy efficiency options and understand that these options may be more cost-effective first steps for them to take before embarking on a solar energy implementation. (◇ ■ ▲)
- The program should continue efforts to move toward a single Indemnification clause for all Program Administrators. Two of the PAs currently have a single clause but one PA is

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facing some legal challenges. We recommend that the legal department from each PA meet to review concerns and agree on common language, if possible. (◆)

- The program establish an allowance (e.g. 10%) for going over the design production so paperwork does not have to be redone, and redefine minimal shading based on 90% availability. (▲◆)
- The utilities permit external contractors to sign a one-time affidavit that grants them and their employees rights to access only the customer data that they need to see to perform their job. (▲)
- The program remove the requirement to read the solar handbook. (◆)
- The program remove the requirement for a government agency to provide a tax exempt certificate as part of their application package. (◆)
- Each PA should only verify application information once, either internally or externally. This issue was only prevalent at one PA we note that the PA has already recognized it duplication issues. Following our meeting, this PA took quick action to bring the application processing activities for residential applications in-house; with plans to migrate the more difficult non-residential applications in-house after approximately one month (due to learning curve). Although the PA has had some initial challenges as a result of implementing a new process very rapidly, we encourage them to continue with their efforts at a diligent but sensible pace. (▲)

**To rectify issues with PowerClerk, we recommend that the program:**

- Upgrade PowerClerk to allow an application to be modified and corrected online by the customer, including an audit trail capability to track changes. (▲)
- Upgrade PowerClerk to provide the ability to electronically attach and track CSI application documents and supporting materials in Power Clerk. The enhancement is planned to be available in Q1 2010. Until this new Power Clerk ability is made available, send customers/installers an email confirming receipt of documents and forms. If PowerClerk capability is enhanced to allow electronic document attachments, the extra step of scanning applications should be eliminated. If PowerClerk is not enhanced to allow document attachments and SCE consolidates application processing either in-house or with a third-party provider, the scanning of application forms should be reduced or eliminated. (▲)
- Investigate enhancements to PowerClerk to automatically perform validation (for contractor license, meter #, address, etc.) for reservation and incentive applications. However, this should be balanced against the life expectancy of the program versus the cost of automation. (■)

**To improve participant satisfaction (both host customers and contractors), we recommend that:**

- Each PA should determine whether they can assign a representative to each applicant for the entire duration of the program participation process. (▲)
- Each utility in collaboration with the program, explore whether a representative can be assigned to each solar customer for the entire solar adoption process, i.e. from time of

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initial program application through reconciliation of customer billings. (▲)

- Each utility in collaboration with the program, investigate ways to provide a single point of entry for all data that is entered, possibly during the reservation request phase, with a view toward automating the data feed from the CSI application process to the interconnect department. *NOTE: SCE has plans to pilot this approach in early 2010. Their progress should be monitored and lessons learned from this could be transferred to the other utilities.* (▲)
- The PAs better communicate and coordinate with the interconnection departments by making project information transparent and easily accessible for the interconnection staff; perhaps conduct further research into how the two parties are communicating within each IOU territory. (■)
- The program better inform customers that intend to contact the interconnection department directly of the expected time it takes to complete this step and suggest the best time during the project to initiate this process, perhaps a week prior to the scheduled installation date. (★)
- The program remove the system size limitation restriction to encourage greater solar energy generation. If this is not possible, a suitable compromise may be to require the customer to sign a statement of understanding attesting to their knowledge and consent to installation of an oversized system. *Note: The program may consider how recent legislation, AB920, might influence program requirement changes.* (◇)
- Each application processor attempt to contact applicants by phone directly to correct any potential errors in the application forms. Using the phone rather than relying on mail for customer issues would result in greatly improved customer service and also saves the time required to mail a letter and the time required by both the customer and the PA staff to “double handle” the same application. (▲)
- Each PA allow the rebate application fee to be returned to the contractor instead of the host customer, possibly using the same approach that some PAs have already implemented, or change the default to be that application fee gets returned to same party that sent it originally. (▲)
- The program review PA performance metrics to ensure that customer service is a top priority. When questions or issues with applications are uncovered, the teams we met with indicated a preference for communicating issues with customers via mail or email versus trying to resolve issues via telephone. In one example, we observed the review of a reservation request for a customer implementing a 42,000 megawatt system however the application indicated that the system being implemented was 42 megawatts. The application was rejected and a formal letter was sent to the customer. Upon further query, the person we observed indicated that they were being measured by how many applications they could process in a given day and that taking the time to call customers would “slow them down and cause them to miss their performance target for completing applications in a timely manner”. Rejecting the application in effect “stopped the clock” and had the effect of improving the metric that measured application processing time but sacrificed customer service and progress toward the program’s overall MW goal. (■)
- The program encourage interconnection departments to move away from mail-in hard

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copies and toward more efficient electronic forms to the extent possible. (■)

- The program investigate the possibility of having the interconnect team also verify solar panel installation, rather than by both the interconnect team and the CSI solar inspection team. (▲)
- The program consider adding some information to incentive payments to include, at minimum, language that clarifies this incentive is part of the CSI program and the physical address at which the solar panels were installed. The commercial and public sector customers interviewed in this study claimed that incentive checks do not include the project location, information that is particularly useful for customers who might have installed solar panels at several different business locations. Furthermore, commercial and public sector customers said the payments lack clear information indicating that the check is part of the CSI program. (▲)
- The program increase the number of online contractor training sessions, especially in larger service areas, to allow contractors to attend at their convenience. These sessions would be pre-recorded video trainings that contractors could view at any time. (★)
- Each PA provide an estimated date for when the next incentive drop will occur on the trigger tracker website. It is also recommended that the program proactively notify contractors 45 days in advance of upcoming incentive step changes and 30 days in advance of EPBB calculator changes. (★)
- The program consider ways to make the participation process much shorter over time, potentially a one-step process, as the incentive levels reduce so contractors and customers are still willing to participate in the program as part of their solar installation. (◇)

**To improve the program's current activities to address pain points that the market experiences in the process of installing solar, we recommend that the program:**

- Work to find ways to help customers finance the entire cost of solar, such as through Assembly Bill 811, which allows customers to finance energy efficiency and renewable generation through property taxes. (■)
- Consider helping permit departments that are unfamiliar with solar permit requests develop a solar permit "best practices" protocol. This protocol could be collaboratively developed with input from several permit departments that have a formalized process for issuing solar permits. The protocol could then be available online and shared with inexperienced permit departments with the goal of initially educating them on solar permitting and creating some consistency between permit offices. (★ ■)
- Consider ways to ensure that solar customers receive quality inverters and that contractors install inverters properly. This could be removing poor quality inverters from the CEC list of qualified products, inspecting inverters, or training contractors. (■)
- Find ways to better inform customers of what their utility bill will entail after solar installation. This information may be best communicated through other departments within the utility, perhaps through the billing, interconnection or tariff departments as those departments have direct interaction with the customer. (★ ■)

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- Educate solar contractors to the extent possible on the rate structures at each utility and what rates are recommended for solar customers. (★)
  - Encourage utilities to find ways to better present information on the monthly bills to reduce their perceived complexity. This may warrant further research in this area to identify the sources of confusion and needed changes to the bill. One customer suggested that the bills estimate the expected yearly true up each month so there are no surprises at the end of the year. (★)
  - Encourage the utilities to develop a system of checks and balances to ensure that new solar customers are always placed on the right rates. (▲)



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## 7. IMPLEMENTING INTERIM RECOMMENDATIONS

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The program has been a great success thus far in terms of its high participation rate and participant satisfaction level, both from contractors and host customers. Further, the PAs and the CPUC are working well together to ensure that this program meets its goals. All parties are equally committed to the program's mission. In addition, PAs and the CPUC continually provide opportunities for customer and contractor feedback through public forums. It is readily apparent that the PAs and CPUC are eager to incorporate the market's feedback into its implementation strategy evident by the several steps they have taken to improve this program noted throughout this report.

While the program can be deemed a great success thus far, as seen throughout this report, our evaluation efforts have also shed great light on many areas of improvement for the program. These recommendations provide little benefit if they are not implemented. We encourage the CPUC and the PAs to review our findings and suggestions and apply their knowledge, insight and expertise to develop an implementation plan for all findings and recommendations that they deem worthy.

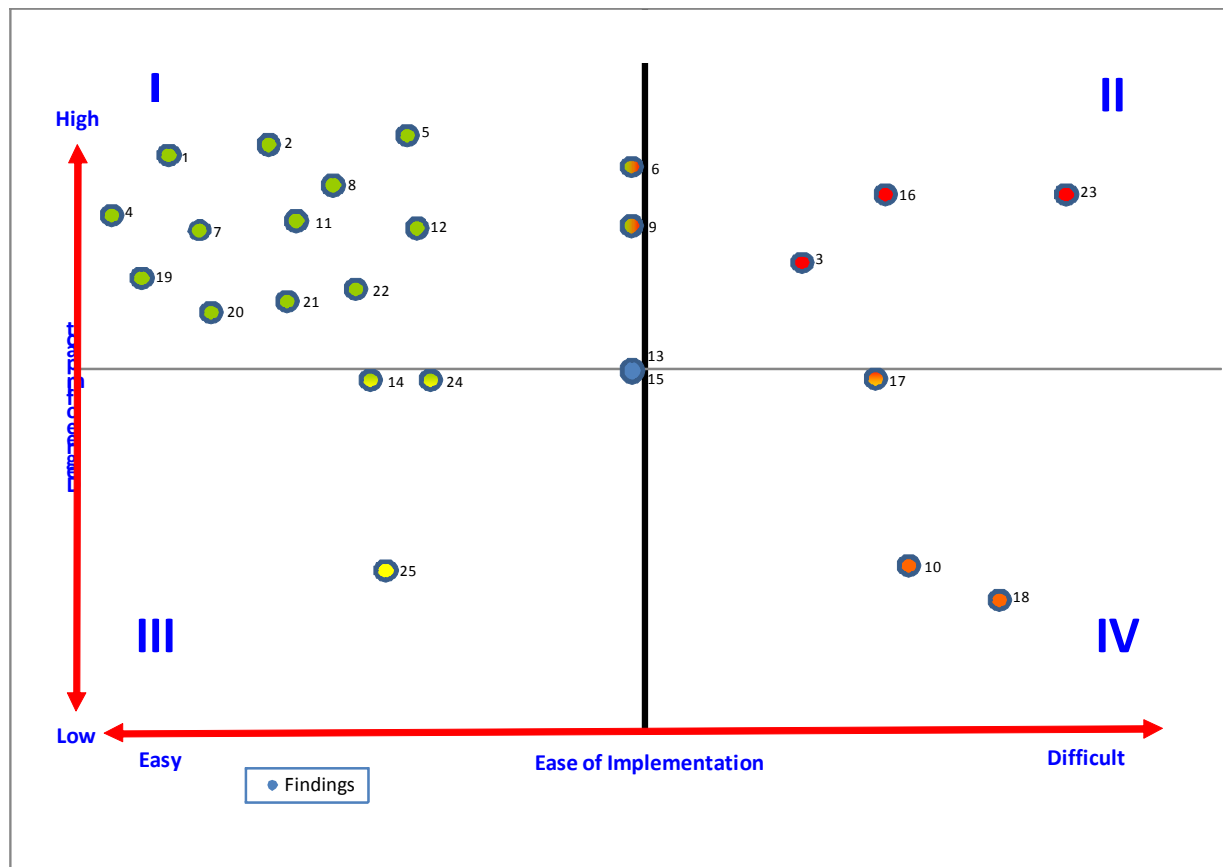
One method to assist with this task is to hold an improvement implementation workshop with the goal of creating a tool (a recommendation prioritization matrix) to assist with prioritizing improvement efforts. This activity would provide all key stakeholders an opportunity to provide insight into the recommendations that should be implemented and the priority level of each. Often this type of workshop consists of an activity where all recommendations are rated for both their potential impact to the program operations (low, medium or high) and the relative difficulty of implementing the change (low, medium or high). This activity provides the building blocks to decision-making. After recommendations are given a rating for implementation and impact, they are charted on a quadrant chart. The chart identifies two axes:

- The horizontal ("X") axis represents a scale indicating the relative ease of implementing the recommendations we have put forward.
- The vertical ("Y") axis represents the likely degree of impact that we believe our recommendations will achieve.

The Figure below provides an example of this type of decision-making tool.



**Figure 1. Recommendation Prioritization Matrix**



Interpretation of the 4-quadrant framework is as follows:

- Recommendations in Quadrant I are relatively easy to implement and offer the greatest degree of payback. These should be prioritized first.
- Recommendations in Quadrant II are relatively difficult to implement and but still offer high value. These should be more carefully evaluated; especially given the cost of implementation.
- Recommendations in Quadrant III are relatively easy to implement but offer the least amount of benefit. Depending on the nature of the recommendation, these should also be evaluated and perhaps only implemented as “filler work” during times of low activity.
- Recommendations in Quadrant IV are relatively difficult to implement and offer the least degree of payback. These recommendations should likely not be pursued or should be pursued with low priority.

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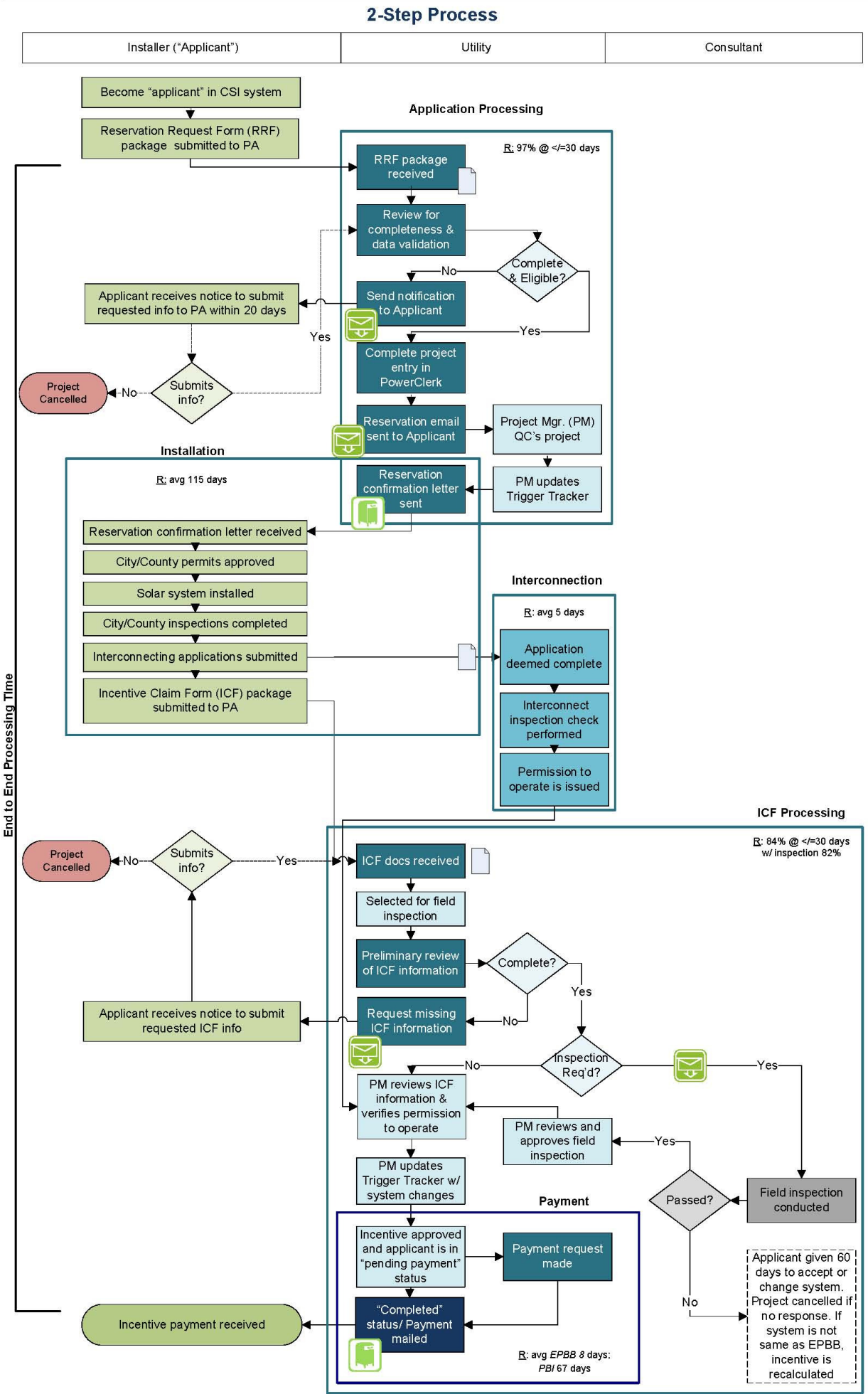
## **A. APPENDIX A. PROCESS MODELS**

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California Solar Initiative Program

Overarching End-to-End Process Model (Data Collection and Processing Time – Major Milestones)

Pacific Gas & Electric (PG&E)

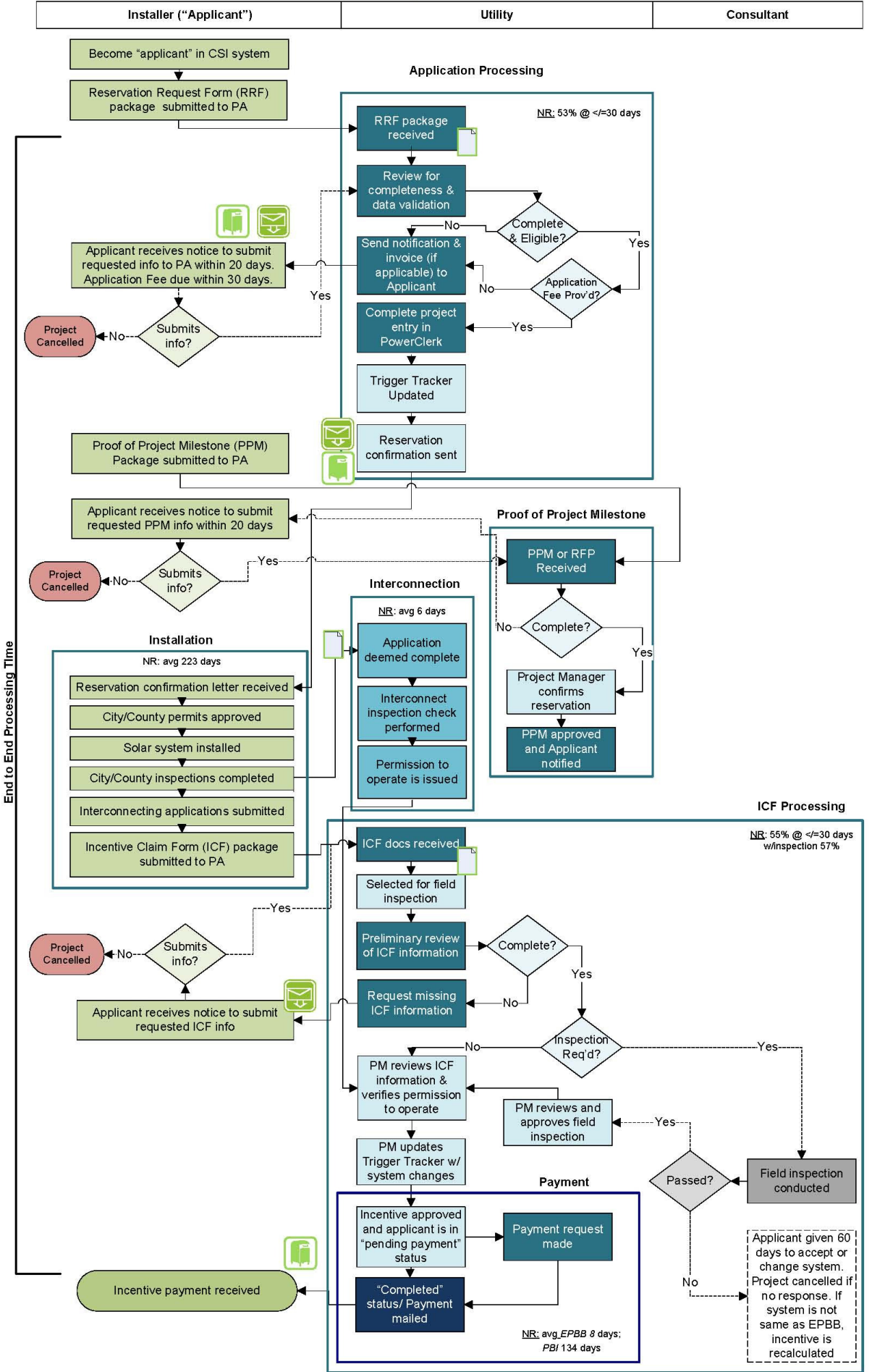


California Solar Initiative Program










Overarching End-to-End Process Model (Data Collection and Processing Time – Major Milestones)

Pacific Gas & Electric (PG&E)

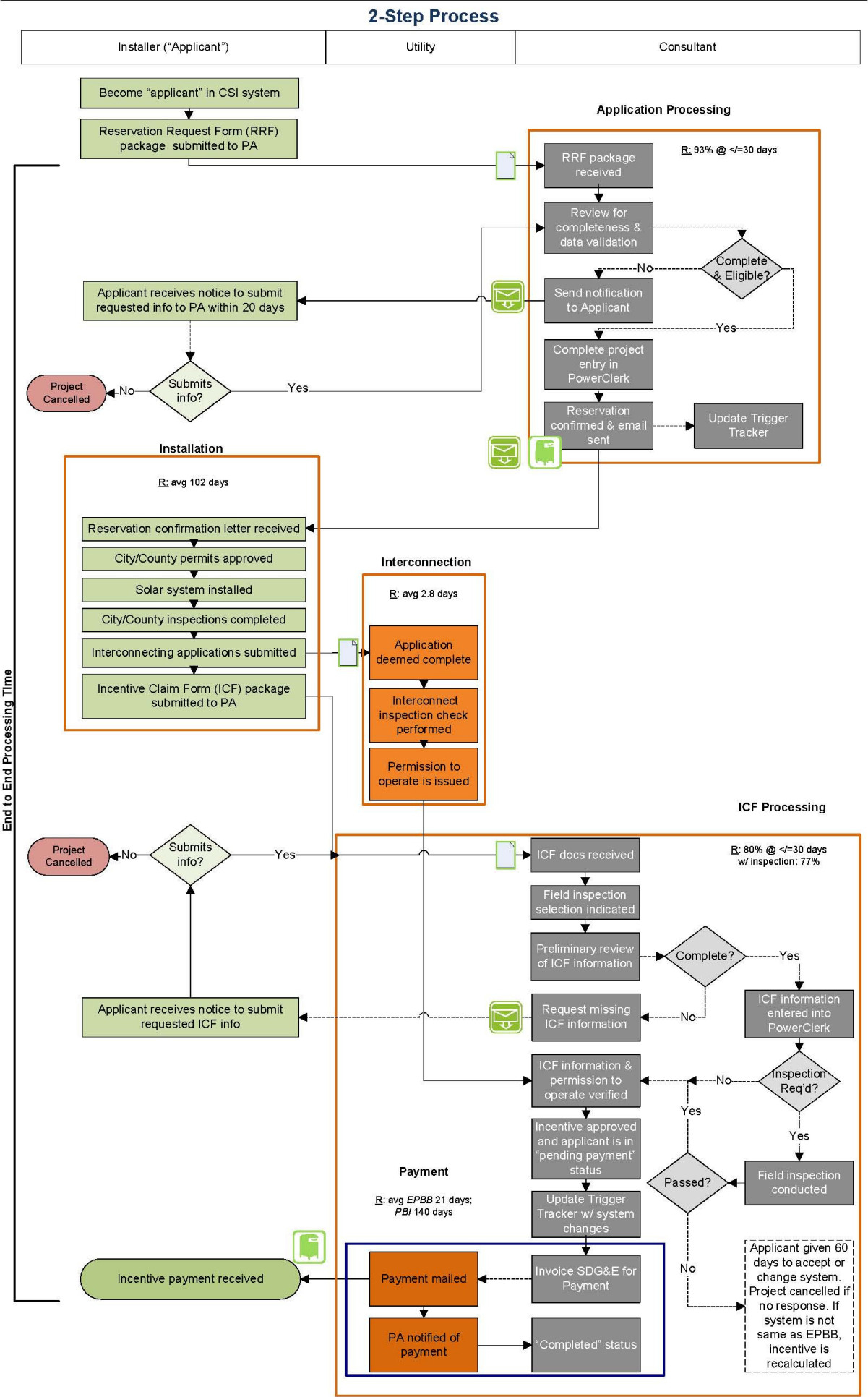
3-Step Process



PG&E Process Map Symbol Legend

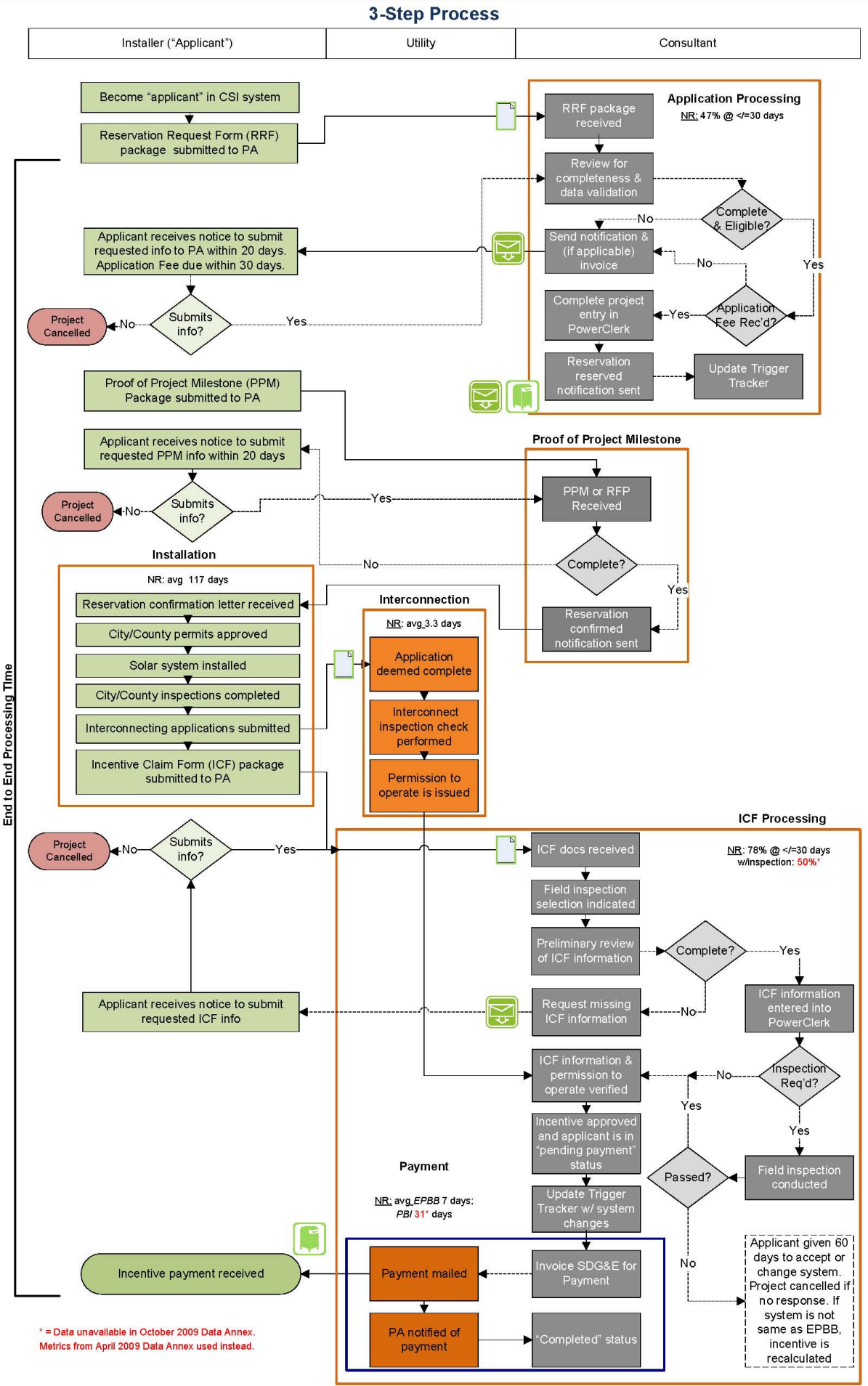
-  CSI Processing Team
-  CSI Project Management Team
-  Interconnect Team
-  Applicant
-  Consultant
-  A/P
-  Document - Any process flow step that produces a document
-  Terminator - Start and stop points in the process
-  Process - Shows a process or action step
-  Decision - Indicates a question or branch in the process flow
-  Mail – Documents or information sent via mail
-  Email – Documents or information sent via email
-  Numbers - Indicates issues that occur throughout the process

California Solar Initiative Program  
Overarching End-to-End Process Model (Data Collection and Processing Time – Major Milestones)  
San Diego Gas & Electric (SDGE)
















California Solar Initiative Program  
Overarching End-to-End Process Model (Data Collection and Processing Time – Major Milestones)  
San Diego Gas & Electric (SDGE)





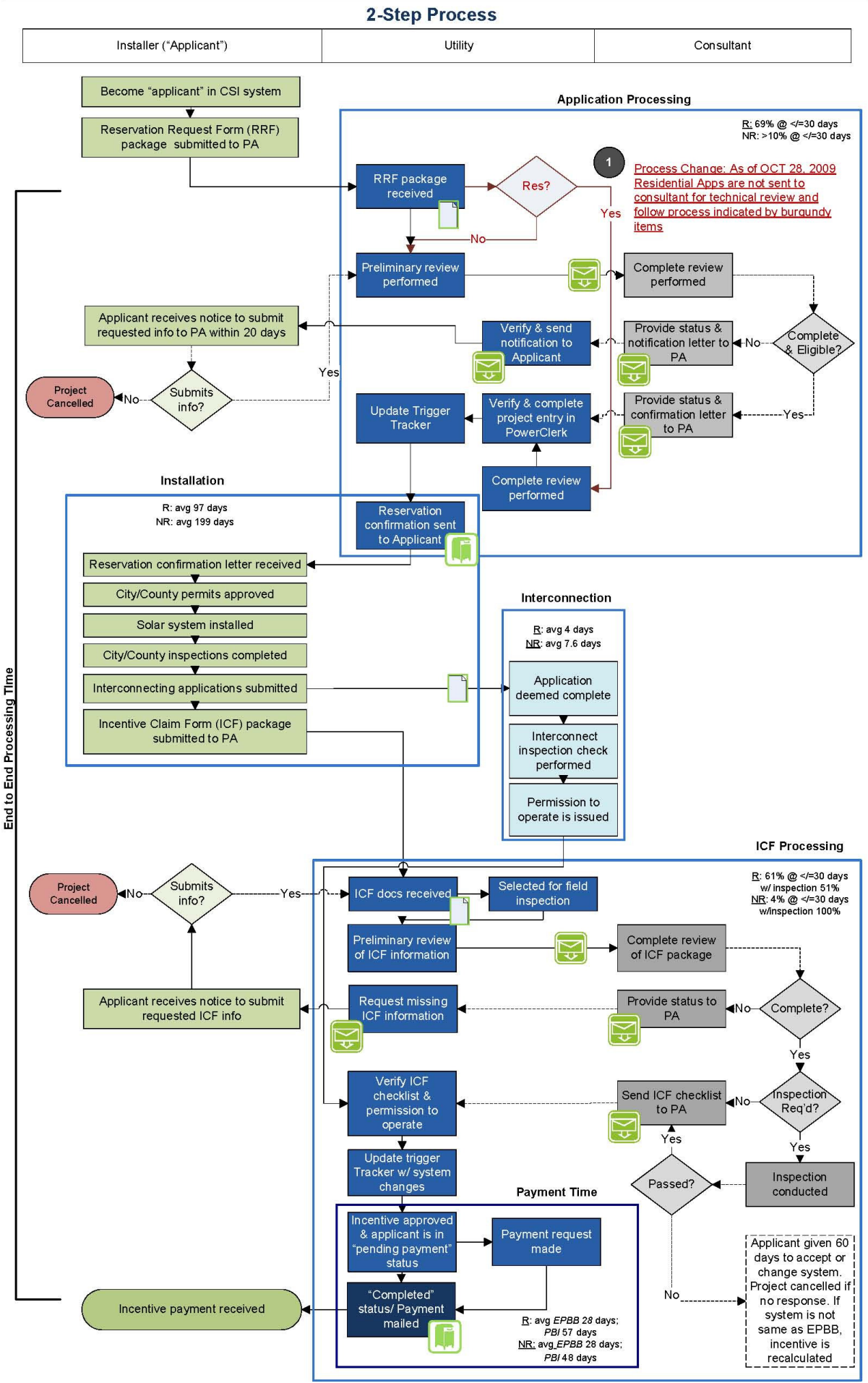
# SDG&E Process Map Symbol Legend

-  Interconnect Team/Utility
-  Applicant
-  CSI Processing Team/Consultant
-  A/P
-  Document - Any process flow step that produces a document
-  Terminator - Start and stop points in the process
-  Process - Shows a process or action step
-  Decision - Indicates a question or branch in the process flow
-  Mail – Documents or information sent via mail
-  Email – Documents or information sent via email
-  Numbers - Indicates issues that occur throughout the process

California Solar Initiative Program

Overarching End-to-End Process Model (Data Collection and Processing Time – Major Milestones)

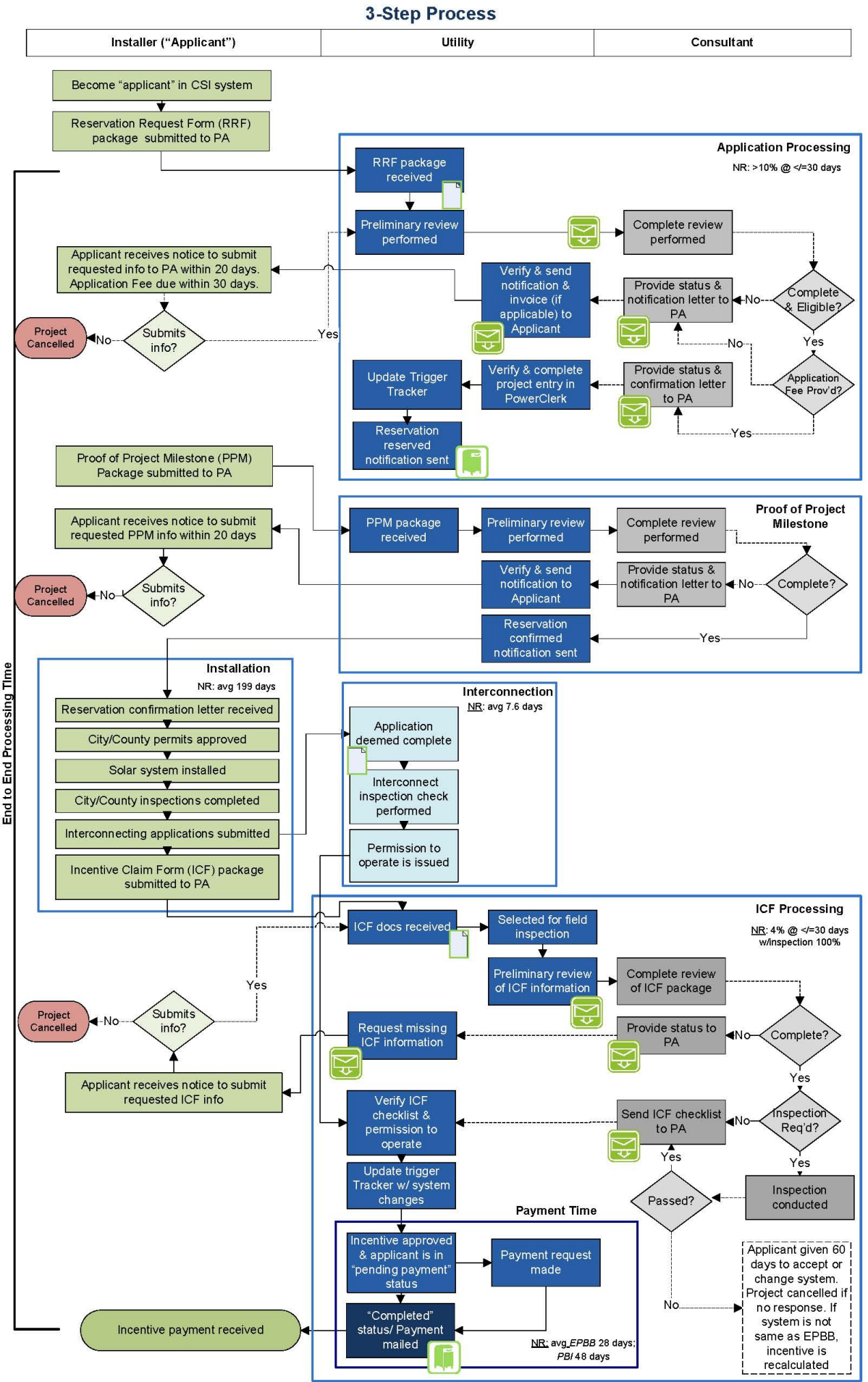
Southern California Edison (SCE)















California Solar Initiative Program

Overarching End-to-End Process Model (Data Collection and Processing Time – Major Milestones)

Southern California Edison (SCE)



## Process Map Symbol Legend

-  CSI Processing Team
-  Interconnect Team
-  Applicant
-  AESC (Consultant)
-  A/P
-  Document - Any process flow step that produces a document
-  Terminator - Start and stop points in the process
-  Process - Shows a process or action step
-  Decision - Indicates a question or branch in the process flow
-  Mail – Documents or information sent via mail
-  Email – Documents or information sent via email
-  Numbers - Indicates issues that occur throughout the process



## B. APPENDIX B. APPLICATION FORMS ANALYSIS

REQUIRED FORMS	Required For:		Required by:		
	2-Step	3-Step	PG&E	SDG&E	SCE
<b><u>Reservation Request Form (RRF) Packet</u></b>					
Reservation Request Form and Program Contract	4	4	Yes	Yes	Yes
<i>Wet Signature Required?</i>			Yes	No	No
Copy of Executed Agreement of Solar System Purchase & Installation	4		Yes	Yes	Yes
Energy Efficiency Audit	4	4	Yes	Yes	Yes
Energy Efficiency Disclosure Form	4	4	Yes	Yes	Yes
EPBB Calculation Printout	4	4	Yes	Yes	Yes
Electrical System Sizing Documentation (Systems > 5 KW)	4	4	Yes	Yes	Yes
Tax Exempt Status Certification (Gov't. & Non-profit)	4	4	Yes	Yes	Yes
Copy of Executed Alternative System Ownership Agreement (if nec.)	4		Yes	Yes	Yes
Authorization to Receive Customer Information	4	4	No	Yes	No
Application Fee		4	Yes	Yes	Yes
<i>Billing History of last 12 months?</i>					
<i>RRF Package Checklist Used?</i>			Yes	No	Yes
<b><u>Proof of Project Milestone (PPM) (Govmt, non-profit, public entity)</u></b>					
Copy of RFP or Solicitation		4	Yes	Yes	Yes
Completed PPM Checklist		4	Yes	Yes	Yes
Executed Contract for System Purchase and Installation		4	Yes		
Copy of Executive Alternative System Ownership Agreement (if nec.)		4	Yes	Yes	Yes
Revised EPBB Calculation Printout (if applicable)		4	Yes	Yes	Yes
<b><u>Interconnect Application</u></b>					
Interconnect Application	4	4	Yes	Yes	Yes
Single Line Diagram & Insurance Information			Yes	Yes	Yes
Bill of Materials			No	Yes	No
Copy of Final Approval of generating system from local bldg authority			Yes	No	No
Recent Electric Bill			No	No	Yes
Interconnection Agreement			*	Yes	*
<b><u>Incentive Claim Form (ICF) Packet</u></b>					
Completed Incentive Claim Form	4	4	Yes	Yes	Yes
Proof of Authorization to Interconnect			Yes	Yes	Yes
PMRS Cost Cap Exemption	4	4	Yes	Yes	Yes
Copy of Executed PMRS/PDP Contract	4	4			
Project Cost Breakdown			Yes	Yes	Yes
Total Reserved System Size			Yes	Yes	Yes

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Field Verification/Certification Form	4	4	Yes	Yes	Yes
Copy of Retro-commissioning Report	4	4	Yes	Yes	Yes
Revised EPBB Calculation Printout (if applicable)	4	4	Yes	Yes	Yes



## C. APPENDIX C. PROGRAM STAFF EARLY RECOMMENDATION WORKSHOP OUTCOME

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
The program eliminate the 1% cap clause so that all participants must have a monitoring service, and consider ways to help offset the cost of the monitoring service so it is not a barrier to solar adoption.	Yes				Additional discussion between CPUC and PAs	CPUC	Medium term	N/A
The program may also eliminate the requirement for monitoring altogether, but this action would have negative implications for collecting the data necessary for an impact evaluation.	Yes			Monitoring is required by SB1	Recommendation not taken	N/A	N/A	N/A
The program reconsider whether the energy efficiency audit step should be a requirement for program participation.	Maybe			EE is required by SB1 and a priority in CA loading order	Recommendation not taken	N/A	N/A	N/A
Reconsider how energy efficiency can be better encouraged through the program, as the energy audit step appears to be unnecessary and/or ineffective. An enhanced audit should be standardized across all three utilities and re-written to include alternative energy options and provide more useful and prioritized customer-specific recommendations about which options would be most effective.	Yes	Maybe	Yes		Additional discussion between CPUC and PAs	CPUC / PAs	Medium/long term	ODC could formulate more specific recommendations on how to better encourage EE.

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
An alternative to having applicants sign or initial multiple questions is to have them sign an acknowledgement that they have been informed about energy efficiency options and understand that these options may be more cost-effective first steps for them to take before embarking on a solar energy implementation.		Maybe	Yes		Additional discussion between CPUC and PAs	CPUC / PAs	Medium/long term	ODC could formulate more specific recommendations on how to better encourage EE.
SCE adopt a single Indemnification clause, following the examples already in place at PG&E and CCSE. We understand that recent attempts have been made to do so, but were resisted by the legal department. We recommend that the legal department at SCE meet with legal representatives from PG&E and SDGE to review concerns and agree on common language, if possible.	Maybe		Yes		SCE is working on the issue.	SCE	Medium term	N/A
The program establish an allowance (e.g. 10%) for going over the design production so paperwork does not have to be redone, and redefine minimal shading based on 90% availability.	Yes		Yes	These are two different issues that need to be decoupled.	Topic on the agenda of the PA meeting.	PAs	Medium term	N/A
The utilities permit external contractors to sign a one-time affidavit that grants them and their employees rights to access only the customer data that they need to see to perform their job.			SDG&E only		CCSE/SDG &E to discuss	CCSE/SDG&E	Short/medium term	N/A
The program remove the requirement to read the solar handbook.			Yes		PAs to discuss	PAs	Short/medium term	N/A

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
The program remove the requirement for a government agency to provide a tax exempt certificate as part of their application package.	Yes				CPUC to issue ruling	CPUC	Short/medium term	N/A
SCE alter operations and only verify application information once, either internally or externally. NOTE: SCE has already recognized its duplication issues, following our meeting at SCE, SCE took quick action to bring the application processing activities for residential applications in-house; with plans to migrate the more difficult non-residential applications in-house after approximately one month (due to learning curve). Although SCE has had some initial challenges as a result of implementing a new process very rapidly, we encourage them to continue with their efforts at a diligent but sensible pace.			SCE only		SCE is working on the issue.	SCE	Short/medium term	N/A
Upgrade PowerClerk to allow an application to be modified and corrected online by the customer, including an audit trail capability to track changes.			Yes	Costs would outweigh benefits	Recommendation not taken	N/A	N/A	N/A

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
Upgrade PowerClerk to provide the ability to electronically attach and track CSI application documents and supporting materials in Power Clerk. The enhancement is planned to be available in Q1 2010. Until this new Power Clerk ability is made available, send customers/installers an email confirming receipt of documents and forms. If PowerClerk capability is enhanced to allow electronic document attachments, the extra step of scanning applications should be eliminated. If PowerClerk is not enhanced to allow document attachments and SCE consolidates application processing either in-house or with a third-party provider, the scanning of application forms should be reduced or eliminated.			Yes; Done already	Already implemented	Recommendation not taken	N/A	N/A	N/A
Investigate enhancements to PowerClerk to automatically perform validation (for contractor license, meter #, address, etc.) for reservation and incentive applications. However, this should be balanced against the life expectancy of the program versus the cost of automation.			Yes	Costs would outweigh benefits	Recommendation not taken	N/A	N/A	N/A

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
Each PA should determine whether they can assign a representative to each applicant for the entire duration of the program participation process.		Could do more research, esp. regarding cost comparison across PAs	Yes		More research, esp. regarding cost to the PAs (PG&E in particular)	ODC	Short/medium term	Could do more research, esp. regarding cost comparison across PAs
Each utility in collaboration with the program, explore whether a representative can be assigned to each solar customer for the entire solar adoption process, i.e. from time of initial program application through reconciliation of customer billings.		Could do more research, esp. regarding cost comparison across PAs	Yes		More research, esp. regarding cost to the PAs (PG&E in particular)	ODC	Short/medium term	Be more specific in recommendation and redraft it.
Each utility in collaboration with the program, investigate ways to provide a single point of entry for all data that is entered, possibly during the reservation request phase, with a view toward automating the data feed from the CSI application process to the interconnect department. <i>NOTE: SCE has plans to pilot this approach in early 2010. Their progress should be monitored and lessons learned from this could be transferred to the other utilities.</i>	Yes; CPUC could help with funding	Could do more research	Yes	CPUC could help with funding	PAs will learn from SCE's efforts.	N/A	N/A	N/A

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
The PAs better communicate and coordinate with the interconnection departments by making project information transparent and easily accessible for the interconnection staff; perhaps conduct further research into how the two parties are communicating within each IOU territory.	Would authorize funding	Could help identify what the parameters for success.	Yes	CPUC may authorize funding	Share experience across all PAs. Training?	PAs	Short/medium term	Could help identify what the parameters for success.
The program better inform customers that intend to contact the interconnection department directly of the expected time it takes to complete this step and suggest the best time during the project to initiate this process, perhaps a week prior to the scheduled installation date.			Yes	Minor issue	PAs will educate customers	PAs	Short/medium term	N/A
The program remove the system size limitation restriction should be removed to encourage greater solar energy generation. If this is not possible, a suitable compromise may be to require the customer to sign a statement of understanding attesting to their knowledge and consent to installation of an oversized system. <i>Note: The program may consider how recent legislation, AB920, might influence program requirement changes.</i>				This is a big issue. CPUC will consider the gist of this recommendation in site definition recommendations	N/A	N/A	Long term	N/A

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
Each application processor attempt to contact applicants by phone directly to correct any potential errors in the application forms. Using the phone rather than relying on mail for customer issues would result in greatly improved customer service and also saves the time required to mail a letter and the time required by both the customer and the PA staff to "double handle" the same application.		Look at it more. Bigger sample size. What's the most effective way?		Anecdotal interaction. Refer to #16,17	Look at it more. Bigger sample size. What's the most effective way?	ODC	Short/medium term	Look at it more. Bigger sample size. What's the most effective way?
PG&E allow the rebate application fee to be returned to the contractor instead of the host customer, possibly using the same approach as CCSE and SCE, or change the default to be that application fee gets returned to same party that sent it originally.			PG&E only		PG&E will investigate	PG&E	Short/medium term	N/A
The program review PA performance metrics to ensure that customer service is a top priority.	Maybe	The recommendation has to be much more specific: metrics...		Too vague.	ODC must be more specific and propose metrics.	ODC	Short/medium term	ODC must be more specific and propose metrics.
The program encourage interconnection departments to move away from mail-in hard copies and toward more efficient electronic forms to the extent possible.				Being done by the PAs	Being done by the PAs	PAs	Short/medium term	N/A



ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
The program investigate the possibility of having the interconnect team also verify solar panel installation, rather than by both the interconnect team and the CSI solar inspection team.	Yes	Low priority, could develop dream scenario		The teams have different skill sets. Different timing. Meter swapping team vs. CSI team. Smart meters could change the way things work	CPUC and PAs should discuss more.	CPUC, PAs	Medium/long term	Low priority, could develop dream scenario
The program consider adding some information to incentive payments to include, at minimum, language that clarifies this incentive is part of the CSI program and the physical address at which the solar panels were installed.		Yes	Yes	Clarify recommendation	ODC research; PAs need to figure out what the customers need	ODC	Short/medium term	ODC research; PAs need to figure out what the customers need
The program increase the number of online contractor training sessions, especially in larger service areas, to allow contractors to attend at their convenience.		Yes	Yes	Not a lot of participation to webinars	ODC to provide more details, more studies; what kind of training? Survey the contractor and customer communities	ODC	Short/medium term	ODC to provide more details, more studies; what kind of training? Survey the contractor and customer communities

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
Each PA provide an estimated date for when the next incentive drop will occur on the trigger tracker website. It is also recommended that the program proactively notify contractors 45 days in advance of upcoming incentive step changes and 30 days in advance of EPBB calculator changes.		Investigate the best way to present data in trigger tracker.		Very hard to forecast 30 days ahead. We will not follow this recommendation, but will look into Trigger Tracker modification. CSI trigger tracker website is poorly formatted	No action required, except improve presentation and communication online. Use graphs?	CPR	Short/medium term	N/A
The program consider ways to make the participation process much shorter over time, potentially a one-step process, as the incentive levels reduce so contractors and customers are still willing to participate in the program as part of their solar installation.				Done	N/A	N/A	N/A	N/A
Work to find ways to help customers finance the entire cost of solar, such as through Assembly Bill 811, which allows customers to finance energy efficiency and renewable generation through property taxes.			Yes	Long-term effort. Do co-marketing with CSI money? Link up AB811 and CSI databases? People will have 2 applications in parallel.	Long-term, to be thought through. Talk to Renewable Funding.	CPUC / Molly	N/A	N/A

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
Consider helping permit departments that are unfamiliar with solar permit requests develop a solar permit “best practices” protocol. This protocol could be collaboratively developed with input from several permit departments that have a formalized process for issuing solar permits. The protocol could then be available online and shared with inexperienced permit departments with the goal of initially educating them on solar permitting and creating some consistency between permit offices.	Maybe for funding	May be able to help define what PA best role is.	Identify opportunities to spend money on training them.	Leverage existing work from Bill Brooks / Solartech. Break into best practices and data issues.	CCSE: Clean up the way permitting costs are organized in Powerclerk (CPR) and make it public. Make it in public reporting. ODC: help PAs define what PAs can do	CCSE, ODC	Medium term	Help define what PA best role is in this effort
Consider ways to ensure that solar customers receive quality inverters and that contractors install inverters properly. This could be removing poor quality inverters from the CEC list of qualified products, inspecting inverters, or training contractors.			Take the gist of this rec to develop consumer outreach re warranty issues	Take the gist of this rec to develop consumer outreach re warranty issues	Take the gist of this rec to develop consumer outreach re warranty issues	CPUC	Medium/long term	Use a larger sample size to refine recommendation

ODC Recommendation	Would measure require CPUC action?	Would measure require ODC action	Would measure require PA action	Discussion Notes (also see PA notes to the right)	Next steps	Responsibility for next step	Implementation time horizon	Feedback to ODC
Find ways to better inform customers of what their utility bill will entail after solar installation. This information may be best communicated through other departments within the utility, perhaps through the billing, interconnection or tariff departments as those departments have direct interaction with the customer.			Same as NEM issue; develop NEM customer education materials	Same as NEM issue; develop NEM customer education materials	Waiting for NEM report	N/A	N/A	N/A
Educate solar contractors to the extent possible on the rate structures at each utility and what rates are recommended for solar customers.		Give a better picture of the landscape. Reframe the recommendation.			ODC to give a better picture of the landscape. Reframe the recommendation.	ODC	N/A	Give a better picture of the landscape. Reframe the recommendation.
Encourage utilities to find ways to better present information on the monthly bills to reduce their perceived complexity. This may warrant further research in this area to identify the sources of confusion and needed changes to the bill. One customer suggested that the bills estimate the expected yearly true up each month so there are no surprises at the end of the year.		Do a NEM focus group?	Same as NEM issue; develop NEM customer education materials		Waiting for NEM report	N/A	N/A	Do a NEM focus group?

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Encourage the utilities to develop a system of checks and balances to ensure that new solar customers are always placed on the right rates.			Promote the availability of right rate services from service reps	Related to performance rule. A tool is being developed.	Promote the availability of right rate services from service reps	PAs	Short/medium term	N/A

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	Consensus	Consensus				Consensus	Average		Average			
	1. PA processing time 2. PowerClerk 3. Participant Satisfaction 4. Market pain points	1. Change process	2. Create new process	3. Δ program reqs	4. Educate	1. Already implemented 2. Planned for implementation 3. Agreement that it will not be changed 4. Needs additional study (please note any deadlines in "PA Comments" column)	Reduction in Processing Time	Qualitative Positive Impacts (e.g., Applicant Experience)	Add'l Admin Costs	Legal Concern	Conflict with CSI or External Program /Policies	Other
<b>ODC Recommendation</b>												
The program eliminate the 1% cap clause so that all participants must have a monitoring service, and consider ways to help offset the cost of the monitoring service so it is not a barrier to solar adoption.	1. PA processing time			X		4	0.33	1.33	0.67	0.33	1.00	2.00
The program may also eliminate the requirement for monitoring altogether, but this action would have negative implications for collecting the data necessary for an impact evaluation.	1. PA processing time			X		4	1.33	1.00	0.33	1.67	2.00	2.00

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<b>ODC Recommendation</b>												
The program reconsider whether the energy efficiency audit step should be a requirement for program participation.	1. PA processing time	X	X	X		4	1.67	1.33	0.33	2.00	2.67	2.00
Reconsider how energy efficiency can be better encouraged through the program, as the energy audit step appears to be unnecessary and/or ineffective. An enhanced audit should be standardized across all three utilities and re-written to include alternative energy options and provide more useful and prioritized customer-specific recommendations about which options would be most effective.	1. PA processing time	X				4 (PG&E, SCE) or 2 (CCSE, SDG&E)	1.00	2.00	1.33	0.33	1.75	1.00



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<b>ODC Recommendation</b>												
An alternative to having applicants sign or initial multiple questions is to have them sign an acknowledgement that they have been informed about energy efficiency options and understand that these options may be more cost-effective first steps for them to take before embarking on a solar energy implementation.	1. PA processing time	X		X		4	1.67	2.00	0.33	1.67	2.33	1.33
SCE adopt a single Indemnification clause, following the examples already in place at PG&E and CCSE. We understand that recent attempts have been made to do so, but were resisted by the legal department. We recommend that the legal department at SCE meet with legal representatives from PG&E and SDGE to review concerns and agree on common language, if possible.	1. PA processing time			X		4	1.00	2.00	0.00	2.00	0.00	0.00

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The program establish an allowance (e.g. 10%) for going over the design production so paperwork does not have to be redone, and redefine minimal shading based on 90% availability.	1. PA processing time	X		X		4 (SCE, CCSE) or ? (PG&E)	2.00	1.50	0.50	1.00	1.00	0.50
The utilities permit external contractors to sign a one-time affidavit that grants them and their employees rights to access only the customer data that they need to see to perform their job.	1. PA processing time	X				4 (SCE, CCSE) or ? (PG&E)	2.00	2.00	1.00	2.50	1.00	1.00
The program remove the requirement to read the solar handbook.	1. PA processing time			X		4	0.33	1.67	0.33	1.67	1.33	1.00
The program remove the requirement for a government agency to provide a tax exempt certificate as part of their application package.	1. PA processing time			X		4	1.50	2.00	0.50	1.00	1.00	1.00

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SCE alter operations and only verify application information once, either internally or externally. NOTE: SCE has already recognized its duplication issues, following our meeting at SCE, SCE took quick action to bring the application processing activities for residential applications in-house; with plans to migrate the more difficult non-residential applications in-house after approximately one month (due to learning curve). Although SCE has had some initial challenges as a result of implementing a new process very rapidly, we encourage them to continue with their efforts at a diligent but sensible pace.	1. PA processing time	X				2	0.00	0.00	0.00	0.00	0.00	0.00

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Upgrade PowerClerk to allow an application to be modified and corrected online by the customer, including an audit trail capability to track changes.	2. PowerClerk	X				4	1.00	2.33	2.33	1.00	0.50	1.00

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Investigate enhancements to PowerClerk to automatically perform validation (for contractor license, meter #, address, etc.) for reservation and incentive applications. However, this should be balanced against the life expectancy of the program versus the cost of automation.	2. PowerClerk		X			4	1.33	1.50	2.67	1.00	0.33	0.33
Each PA should determine whether they can assign a representative to each applicant for the entire duration of the program participation process.	3. Participant satisfaction	X				4 (PG&E, SCE) or 1 (CCSE)	1.00	2.00	2.00	0.00	0.00	0.00
Each utility in collaboration with the program, explore whether a representative can be assigned to each solar customer for the entire solar adoption process, i.e. from time of initial program application through reconciliation of customer billings.	3. Participant satisfaction	X				4 (PG&E, SCE) or 1 (CCSE)	1.00	2.00	3.00	0.00	0.00	0.00

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The program better inform customers that intend to contact the interconnection department directly of the expected time it takes to complete this step and suggest the best time during the project to initiate this process, perhaps a week prior to the scheduled installation date.	3. Participant satisfaction				X	4	0.33	2.33	1.00	0.67	0.33	0.33

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<b>ODC Recommendation</b>												
Each application processor attempt to contact applicants by phone directly to correct any potential errors in the application forms. Using the phone rather than relying on mail for customer issues would result in greatly improved customer service and also saves the time required to mail a letter and the time required by both the customer and the PA staff to "double handle" the same application.	3. Participant satisfaction	X				4 (PG&E), 1 (SCE, CCSE)	1.00	1.00	1.00	1.00	0.00	1.00
PG&E allow the rebate application fee to be returned to the contractor instead of the host customer, possibly using the same approach as CCSE and SCE, or change the default to be that application fee gets returned to same party that sent it originally.	3. Participant satisfaction	X				4 (PG&E)	0.00	1.00	1.00	0.00	0.00	0.00

	Category	Type				Status	Potential Positive Impact (1 = low, 3 = high)		Barriers to Implementation (1 = low, 3 = high)			
	Consensus	Consensus				Consensus	Average		Average			
	1. PA processing time 2. PowerClerk 3. Participant Satisfaction 4. Market pain points	1. Change process	2. Create new process	3. Δ program reqs	4. Educate	1. Already implemented 2. Planned for implementation 3. Agreement that it will not be changed 4. Needs additional study (please note any deadlines in "PA Comments" column)	Reduction in Processing Time	Qualitative Positive Impacts (e.g., Applicant Experience)	Add'l Admin Costs	Legal Concern	Conflict with CSI or External Program /Policies	Other
<b>ODC Recommendation</b>												
The program review PA performance metrics to ensure that customer service is a top priority.	3. Participant satisfaction		X			1	0.00	0.00	0.00	0.00	0.00	0.00
The program encourage interconnection departments to move away from mail-in hard copies and toward more efficient electronic forms to the extent possible.	3. Participant satisfaction		X			2 (SCE), 4 (CCSE), 1 (SDG&E)	2.00	2.50	1.00	0.00	0.00	0.00
The program investigate the possibility of having the interconnect team also verify solar panel installation, rather than by both the interconnect team and the CSI solar inspection team.	3. Participant satisfaction	X				4 (PG&E, SDG&E), 3 (SCE, CCSE)	0.75	1.50	2.25	1.00	0.33	1.67
The program consider adding some information to incentive payments to include, at minimum, language that clarifies this incentive is part of the CSI program and the physical address at which the solar panels were installed.	3. Participant satisfaction	X				4	0.33	2.33	1.50	0.33	0.33	0.33

	Category	Type				Status	Potential Positive Impact (1 = low, 3 = high)		Barriers to Implementation (1 = low, 3 = high)			
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<b>ODC Recommendation</b>												
The program increase the number of online contractor training sessions, especially in larger service areas, to allow contractors to attend at their convenience.	3. Participant satisfaction				X	2 (PG&E, CCSE), 1 (SCE)	1.00	2.00	1.67	0.33	0.33	0.33
Each PA provide an estimated date for when the next incentive drop will occur on the trigger tracker website. It is also recommended that the program proactively notify contractors 45 days in advance of upcoming incentive step changes and 30 days in advance of EPBB calculator changes.	3. Participant satisfaction				X	4 (PG&E), 2 (SCE), 3 (CCSE)	0.33	1.33	1.00	1.67	0.33	1.67

	Category	Type				Status	Potential Positive Impact (1 = low, 3 = high)		Barriers to Implementation (1 = low, 3 = high)			
	Consensus	Consensus				Consensus	Average		Average			
	1. PA processing time 2. PowerClerk 3. Participant Satisfaction 4. Market pain points	1. Change process	2. Create new process	3. Δ program reqs	4. Educate	1. Already implemented 2. Planned for implementation 3. Agreement that it will not be changed 4. Needs additional study (please note any deadlines in "PA Comments" column)	Reduction in Processing Time	Qualitative Positive Impacts (e.g., Applicant Experience)	Add'l Admin Costs	Legal Concern	Conflict with CSI or External Program /Policies	Other
<b>ODC Recommendation</b>												
The program consider ways to make the participation process much shorter over time, potentially a one-step process, as the incentive levels reduce so contractors and customers are still willing to participate in the program as part of their solar installation.	3. Participant satisfaction			X		4 (PG&E, SCE), 2 (CCSE)	3.00	2.33	1.50	1.00	0.67	1.67
Work to find ways to help customers finance the entire cost of solar, such as through Assembly Bill 811, which allows customers to finance energy efficiency and renewable generation through property taxes.	4. Market pain points		X			4 (PG&E, CCSE) or 1 (SCE)	0.33	2.33	1.33	1.00	1.00	0.67

	Category	Type				Status	Potential Positive Impact (1 = low, 3 = high)		Barriers to Implementation (1 = low, 3 = high)			
	Consensus	Consensus				Consensus	Average		Average			
	1. PA processing time 2. PowerClerk 3. Participant Satisfaction 4. Market pain points	1. Change process	2. Create new process	3. Δ program reqs	4. Educate	1. Already implemented 2. Planned for implementation 3. Agreement that it will not be changed 4. Needs additional study (please note any deadlines in "PA Comments" column)	Reduction in Processing Time	Qualitative Positive Impacts (e.g., Applicant Experience)	Add'l Admin Costs	Legal Concern	Conflict with CSI or External Program /Policies	Other
<b>ODC Recommendation</b>												
Consider helping permit departments that are unfamiliar with solar permit requests develop a solar permit "best practices" protocol. This protocol could be collaboratively developed with input from several permit departments that have a formalized process for issuing solar permits. The protocol could then be available online and shared with inexperienced permit departments with the goal of initially educating them on solar permitting and creating some consistency between permit offices.	4. Market pain points		X		X	4 (PG&E), 1 (SCE, CCSE)	1.00	2.33	1.00	0.67	0.33	0.33



	Category	Type				Status	Potential Positive Impact (1 = low, 3 = high)		Barriers to Implementation (1 = low, 3 = high)			
	Consensus	Consensus				Consensus	Average		Average			
	1. PA processing time 2. PowerClerk 3. Participant Satisfaction 4. Market pain points	1. Change process	2. Create new process	3. Δ program reqs	4. Educate	1. Already implemented 2. Planned for implementation 3. Agreement that it will not be changed 4. Needs additional study (please note any deadlines in "PA Comments" column)	Reduction in Processing Time	Qualitative Positive Impacts (e.g., Applicant Experience)	Add'l Admin Costs	Legal Concern	Conflict with CSI or External Program /Policies	Other
<b>ODC Recommendation</b>												
Consider ways to ensure that solar customers receive quality inverters and that contractors install inverters properly. This could be removing poor quality inverters from the CEC list of qualified products, inspecting inverters, or training contractors.	4. Market pain points		X			4 (PG&E), 1 (SCE), 3 (CCSE)	0.00	1.00	1.00	0.00	0.00	1.00
Find ways to better inform customers of what their utility bill will entail after solar installation. This information may be best communicated through other departments within the utility, perhaps through the billing, interconnection or tariff departments as those departments have direct interaction with the customer.	4. Market pain points		X		X	4 (PG&E), 2 (SCE), 1 (CCSE)	0.33	2.67	1.00	0.33	0.33	1.00

	Category	Type				Status	Potential Positive Impact (1 = low, 3 = high)		Barriers to Implementation (1 = low, 3 = high)			
	Consensus	Consensus				Consensus	Average		Average			
	1. PA processing time 2. PowerClerk 3. Participant Satisfaction 4. Market pain points	1. Change process	2. Create new process	3. Δ program reqs	4. Educate	1. Already implemented 2. Planned for implementation 3. Agreement that it will not be changed 4. Needs additional study (please note any deadlines in "PA Comments" column)	Reduction in Processing Time	Qualitative Positive Impacts (e.g., Applicant Experience)	Add'l Admin Costs	Legal Concern	Conflict with CSI or External Program /Policies	Other
<b>ODC Recommendation</b>												
Educate solar contractors to the extent possible on the rate structures at each utility and what rates are recommended for solar customers.	4. Market pain points				X	4 (PG&E), 2 (SCE), 1 (CCSE)	0.33	2.67	1.00	0.33	0.33	0.33
Encourage utilities to find ways to better present information on the monthly bills to reduce their perceived complexity. This may warrant further research in this area to identify the sources of confusion and needed changes to the bill. One customer suggested that the bills estimate the expected yearly true up each month so there are no surprises at the end of the year.	4. Market pain points				X	4	0.33	2.67	2.00	0.67	0.33	0.67

	Category	Type				Status	Potential Positive Impact (1 = low, 3 = high)		Barriers to Implementation (1 = low, 3 = high)			
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<b>ODC Recommendation</b>												
Encourage the utilities to develop a system of checks and balances to ensure that new solar customers are always placed on the right rates.	4. Market pain points	X				4	0.50	2.50	2.00	2.00	0.00	0.00

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
The program eliminate the 1% cap clause so that all participants must have a monitoring service, and consider ways to help offset the cost of the monitoring service so it is not a barrier to solar adoption.	Would improve system performance and facilitate M&E activities, but may reduce number of systems installed; or, if the cost is offset with CSI \$, would reduce the funds available for other projects.	This is an issue that must be considered jointly with the CPUC and the other PAs. The CPUC reponse to the Metering Memo may bring closure to this issue.	Would slightly reduce program administration costs, due to fewer suspensions; however, costs associated with meter subsidizes would be high. Could this come out of M&E? If not subsidized possible push-back form industry (i.e. CALSEIA)	
The program may also eliminate the requirement for monitoring altogether, but this action would have negative implications for collecting the data necessary for an impact evaluation.	SB1 requires monitoring; may increase #s of systems installed, but with likely lower output; also, would increase costs/challenges for M&E.	See comments for #1	Removing all metering is not a viable option due to the M&E requirements of the program. A potential solution could involve a sampling of projects to receive subsidized metering systems, identified at the time of ICF.	

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
The program reconsider whether the energy efficiency audit step should be a requirement for program participation.	SB1 requires EE with PV; facilitates IOUs meeting EE goals; only a minor "burden" on customer	While SCE agrees that the energy efficiency audit has been somewhat ineffective, California's energy loading order requires that energy efficiency measures are adopted prior to solar PV. Adopting EE measures in concert with solar PV is more cost-effective than only adopting solar PV both to solar customers and to the non-participating ratepayers who subsidize PV costs. Thus, while this recommendation ultimately falls to the CPUC, SCE supports the EE audit and rejects the recommendation to remove it.	Raises issues regarding compliance with SB1.	Should be a requirement this is completed by customer. Audits are going to be improved.
Reconsider how energy efficiency can be better encouraged through the program, as the energy audit step appears to be unnecessary and/or ineffective. An enhanced audit should be standardized across all three utilities and re-written to include alternative energy options and provide more useful and prioritized customer-specific recommendations about which options would be most effective.	Sounds good, but coordination across utilities will be difficult and/or costly; CSI is too small of a program to drive IOU-wide EE audit changes. However, efforts are already underway to revamp PG&E's EE audit tool, and will include DG options.	See comments for #2	Costs of implementation charged to non-CSI programs.	Is in process of being done though this will take some time (not sure how long at this point).

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
An alternative to having applicants sign or initial multiple questions is to have them sign an acknowledgement that they have been informed about energy efficiency options and understand that these options may be more cost-effective first steps for them to take before embarking on a solar energy implementation.	SB1 requires EE with PV; EE audits facilitate IOUs meeting EE goals; only a minor "burden" on customer	See comments for #2	Raises issues regarding compliance with SB1.	
SCE adopt a single Indemnification clause, following the examples already in place at PG&E and CCSE. We understand that recent attempts have been made to do so, but were resisted by the legal department. We recommend that the legal department at SCE meet with legal representatives from PG&E and SDGE to review concerns and agree on common language, if possible.	N/A	This is a good suggestion. As stated, SCE has in past pursued changing this requirement with our legal department. We recognize the multiple indemnification clauses are cumbersome and we will continue to pursue adopting a single indemnification clause.	N/A	

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
The program establish an allowance (e.g. 10%) for going over the design production so paperwork does not have to be redone, and redefine minimal shading based on 90% availability.	SB1 requires that systems be sized to no more than the customers onsite load. This loses the intent of the program and may not added any benefit to ratepayers.	This topic is currently under discussion among the PAs as a Working Group agenda item.	CCSE supports the allowance for going over design production, however does not support reducing the minimal shading definition. Instead we feel the program (incentive payouts) and ratepayer (NEM benefits) would be better served by requiring a shade analysis for every project. This would remove any potential errors in estimating the 2:1 ratio and adjust for seasonal variations in object shading.	
The utilities permit external contractors to sign a one-time affidavit that grants them and their employees rights to access only the customer data that they need to see to perform their job.	N/A	SCE has no comments for this recommendation, as it is directed to SDG&E.	Allowing an umbrella letter of authorization would greatly reduce the administrative costs of processing applications for CCSE. It would also allow CCSE to more easily provide data for M&E purposes.	See this as a minor issue. We have worked around this just fine with CCSE. Customer usually provides CCSE with Energy Waves data or they contact me.



ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
The program remove the requirement to read the solar handbook.	We need to be sure customers agree to the terms of the program. The only alternative I could see is to have them state that they "agree to all terms of the CSI program" instead of confirming that they read the handbook; however, in the end, the required responsibility is the same.	SCE recognizes that many customers likely do not read the full handbook, and is willing to consider changing this requirement to read the handbook to a program recommendation rather than a requirement.	Removing this requirement and exchanging it for language to the affect that "by accepting an incentive (or reservation) I agree to be bound to the requirements outlined in the CSI program handbook."	
The program remove the requirement for a government agency to provide a tax exempt certificate as part of their application package.	This is in a CPUC Decision.	SCE has not encountered this issue with our governmental customers. We will, however look into whether it is a problem or not.	Administratively burdensome for host customers to prove tax-exempt status.	
SCE alter operations and only verify application information once, either internally or externally. NOTE: SCE has already recognized its duplication issues, following our meeting at SCE, SCE took quick action to bring the application processing activities for residential applications in-house; with plans to migrate the more difficult non-residential applications in-house after approximately one month (due to learning curve). Although SCE has had some initial challenges as a result of implementing a new process very rapidly, we encourage them to continue with their efforts at a diligent but sensible pace.	N/A	As stated, SCE is in the process of streamlining CSI application processing.	N/A	

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
Upgrade PowerClerk to allow an application to be modified and corrected online by the customer, including an audit trail capability to track changes.	Would be challenging from a data integrity perspective.	SCE believes that this requirement would impose significant costs relative to the marginal benefits that would be achieved.	Customer benefits may be outweighed by implementation costs and does not necessarily increase application processing efficiency.	
Upgrade PowerClerk to provide the ability to electronically attach and track CSI application documents and supporting materials in Power Clerk. The enhancement is planned to be available in Q1 2010. Until this new Power Clerk ability is made available, send customers/installers an email confirming receipt of documents and forms. If PowerClerk capability is enhanced to allow electronic document attachments, the extra step of scanning applications should be eliminated. If PowerClerk is not enhanced to allow document attachments and SCE consolidates application processing either in-house or with a third-party provider, the scanning of application forms should be reduced or eliminated.	Already implented.	This functionality has been added to PowerClerk.	N/A	

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
Investigate enhancements to PowerClerk to automatically perform validation (for contractor license, meter #, address, etc.) for reservation and incentive applications. However, this should be balanced against the life expectancy of the program versus the cost of automation.	Would improve quality control and would ultimately reduce processing costs, but would be costly to implement (and to maintain/update lists). Also, PG&E would be concerned about being held liable for ensuring external certifications.	Given the relatively short duration for the program, adding this functionality would not be cost-effective.		
Each PA should determine whether they can assign a representative to each applicant for the entire duration of the program participation process.	Would be nice from a customer perspective however, volumes for PG&E are simply too high to do this, especially given the 5% administration limit.	SCE agrees with the concept of moving toward this model of one CSI representative per project. We are in the process of investigating if and how this can be implemented, cost-effectively, into our current program structure without disruption of program activities.	N/A	
Each utility in collaboration with the program, explore whether a representative can be assigned to each solar customer for the entire solar adoption process, i.e. from time of initial program application through reconciliation of customer billings.	Would be nice from a customer perspective however, volumes for PG&E are simply too high to do this, especially given the 5% administration limit and resource constraints in other departments.	Again, SCE agrees with this concept in principle and will investigate if this is doable and cost-effective solution to customer concerns.	N/A	

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
Each utility in collaboration with the program, investigate ways to provide a single point of entry for all data that is entered, possibly during the reservation request phase, with a view toward automating the data feed from the CSI application process to the interconnect department. <i>NOTE: SCE has plans to pilot this approach in early 2010. Their progress should be monitored and lessons learned from this could be transferred to the other utilities.</i>	Interested in learning from SCE's efforts. Maybe difficult to implement internally with resources and funding.	As stated in the recommendation, SCE is in the process of moving toward a single application for the CSI program participation and interconnection to SCE's distribution network.	More issues likely given that CCSE and SDG&E Interconnection department are not the same entity, however automation may be possible and we would like to explore further.	
The PAs better communicate and coordinate with the interconnection departments by making project information transparent and easily accessible for the interconnection staff; perhaps conduct further research into how the two parties are communicating within each IOU territory.	PG&E has a daily upload of all new CSI applications into the Interconnection database.	While SCE has not heard these complaints from its CSI customers, we are trying to facilitate better information transfer between the CSI program and other internal groups including the interconnection department. Along with our effort to implement a single application process, we are investigating IT solutions, such as a Solar Project graphical use interface that makes solar project information transparent to other internal groups.	More issues likely given that CCSE and SDG&E Interconnection department are not the same entity, however automation may be possible and we would like to explore further.	I don't see this as an issue in our territory, especially when the contractor handles this process. Greater issue of concern is permitting process which delays interconnection time.

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
The program better inform customers that intend to contact the interconnection department directly of the expected time it takes to complete this step and suggest the best time during the project to initiate this process, perhaps a week prior to the scheduled installation date.	Good idea; however, we will not be able to provide "firm" timelines, other than the fact that the interconnection review must be complete within 30 days from date of submittal.	SCE agrees that the contractors generally have a better idea of when to initiate the interconnection process than do most customers. When we move to a single application, this problem should be greatly minimized. In the mean time, we will work to communicate the benefits of applying for interconnection early in the project development during our customer information sessions and our FAQ pages on-line.		I don't see this as an issue in our territory, especially when the contractor handles this process. Greater issue of concern is permitting process which delays interconnection time.
The program remove the system size limitation restriction should be removed to encourage greater solar energy generation. If this is not possible, a suitable compromise may be to require the customer to sign a statement of understanding attesting to their knowledge and consent to installation of an oversized system. <i>Note: The program may consider how recent legislation, AB920, might influence program requirement changes.</i>	SB1 states CSI is for offsetting customer usage only; in addition, NEM is available only for customers that size to facility load. Oversizing systems leads to increased rate-shifting, which is of concern to utilities. This is a much bigger issue than a CSI program rule.	This is a recommendation that should be deferred to the CPUC ED.	Given the EE goals of SB1, allowing incentives for systems with annual production greater than annual consumption is counterproductive. Further, AB920 does not improve project economics given current installation costs and removing justification could ultimately lead contractors to oversell benefits of systems, hurting customers.	I believe that this can create more legal issues for the utilities since over-sizing systems to get paid for the excess is not going to prove to be a good financial investment in the short term. Customers will be paid at some form of a wholesale rate and not at retail as they are with NEM.

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
Each application processor attempt to contact applicants by phone directly to correct any potential errors in the application forms. Using the phone rather than relying on mail for customer issues would result in greatly improved customer service and also saves the time required to mail a letter and the time required by both the customer and the PA staff to “double handle” the same application.	N/A	SCE's current process is to contact customers on the phone prior to communicating by mail. How prevalent was this problem and in which service territories does it occur?	N/A	
PG&E allow the rebate application fee to be returned to the contractor instead of the host customer, possibly using the same approach as CCSE and SCE, or change the default to be that application fee gets returned to same party that sent it originally.	Assuming this does not conflict with CSI program requirements, this should be further investigated.	SCE has no comments for this recommendation, as it is directed to PG&E.	N/A	
The program review PA performance metrics to ensure that customer service is a top priority.	PG&E has internal performance metrics that we consistently meet.	SCE currently uses multiple performance metrics that all aim at improving customer service. We are unsure which of these metrics should be changed or rethought.	Data Annex already reviews application processing time, a major component of customer service.	
The program encourage interconnection departments to move away from mail-in hard copies and toward more efficient electronic forms to the extent possible.	Sounds good, however there are budget constraints with GIS.	SCE is in the process of implementing this.	Rec. 17 would go far in improving this process.	SDGE has implemented this option for systems under 30 kW

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
The program investigate the possibility of having the interconnect team also verify solar panel installation, rather than by both the interconnect team and the CSI solar inspection team.	Good idea, though may be costly to implement the integration. Also may receive pushback from CSI inspection contractors.	Since SCE's interconnection group does not inspect all CSI sites for interconnection, and the CSI program requires a PV system site inspection for all sites, we do not believe it would be cost-effective to cross-train a team to inspect all sites for both.	CCSE inspection staff are currently doing the job cost-effectively and we have concerns that SDG&E interconnection staff may be more expensive. Also, CCSE inspection team have access to PowerClerk for direct feedback into the ICF process, which SDG&E would not have.	Not likely given SDGE is not a program administrator and is not provided funding to hire such personnel. Also concered with safety issues.
The program consider adding some information to incentive payments to include, at minimum, language that clarifies this incentive is part of the CSI program and the physical address at which the solar panels were installed.	Good idea. Is there any problem with adding additional information to the letter to the customer that contains the incentive check?	SCE believes this is a good recommendation and will investigate the cost and resource implications to our accounts payable process to add this information to each rebate check.		
The program increase the number of online contractor training sessions, especially in larger service areas, to allow contractors to attend at their convenience.	PG&E will be making archived webinars available online. PG&E also offers a variety of webinars online and free to all customers.	In 2009 SCE held about 22 in-person training sessions and 9 online. We had somewhat low attendance at the webinars (156 participants). SCE plans on offering 24 in-person classes in 2010 and will make the some classes available via webinar. We are unclear about how many more session should be added, but are open to adding more sessions.	Some online training in process with additional sessions planned.	



ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
Each PA provide an estimated date for when the next incentive drop will occur on the trigger tracker website. It is also recommended that the program proactively notify contractors 45 days in advance of upcoming incentive step changes and 30 days in advance of EPBB calculator changes.	It is difficult to predict when the next step change will occur; PG&E does not want to be held liable for someone missing a higher incentive. Agree that plenty of notice should be given re: calculator changes.	SCE currently attempts to send out email blasts prior to step changes. However, it is very difficult to estimate when the step change will occur and can only send out an estimated date range of the step change. We admit that we need to be more sending these emails out and will work to make this "warning" process more robust.	This is nearly impossible to do effectively. We regularly make internal projects on when Steps will change, but rarely are able to do it effectively. Releasing a date to the contractor community sets the PAs up for failure, as we will be held to the fire when the step changes on a different date. If the existing tools on Trigger Tracker are not effective they should be changed to better serve those who rely on them.	
The program consider ways to make the participation process much shorter over time, potentially a one-step process, as the incentive levels reduce so contractors and customers are still willing to participate in the program as part of their solar installation.	Done, a one step form is available to all customers.	SCE believes the application process should be shortened as much as possible, but currently there are multiple steps to minimize the number of projects in the system have a low probability of completion. As the market evolves, these safeguards may gradually be removed, and consequently, the processing time reduced.	In the planning process currently and we are looking forward to implementation.	

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
Work to find ways to help customers finance the entire cost of solar, such as through Assembly Bill 811, which allows customers to finance energy efficiency and renewable generation through property taxes.	A good idea and something PG&E has provided assistance for.	All the PAs have been putting much emphasis on communicating the options available for project financing. SCE has various marketing material available to customers.	Currently done to a limited extent through CCSE's Solar for Homeowners Workshops. More integration with AB811 Programs planned as program requirements become more defined. Not currently providing much information on PPA/Lease structures.	
Consider helping permit departments that are unfamiliar with solar permit requests develop a solar permit "best practices" protocol. This protocol could be collaboratively developed with input from several permit departments that have a formalized process for issuing solar permits. The protocol could then be available online and shared with inexperienced permit departments with the goal of initially educating them on solar permitting and creating some consistency between permit offices.	This is certainly needed, but leadership might be more appropriately provided by a third party - e.g., SolarABCs, as permitting is not not IOU/PA jurisdiction.	SCE agrees that the disparate municipal permitting rules continues to be a constraining factor on market growth and leads to increased project costs and development times. To help streamline permitting processes, SCE is participating in SolarTech's effort to help reduce permitting cycle times by developing such protocols and lessons learned.	Bill Brooks Engineering has completed a study on this topic and released best practices guidelines for municipalities. It is now a bit dated and could be updated with funds from the program.	
Consider ways to ensure that solar customers receive quality inverters and that contractors install inverters properly. This could be removing poor quality inverters from the CEC list of qualified products, inspecting inverters, or training contractors.	As with #31 above, this would be useful, but generally not within IOU/PA jurisdiction, as the CEC manages the inverter list and associated testing requirements. IOUs are also not in the business of providing technical installation guidance.	SCE believes that customers are protected from faulty equipment by the system warranties that are required as part of the program.	How do we define and verify poor performance? This has to date been the role of the CEC. Is there data or examples of poor quality equipment in the program?	

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
Find ways to better inform customers of what their utility bill will entail after solar installation. This information may be best communicated through other departments within the utility, perhaps through the billing, interconnection or tariff departments as those departments have direct interaction with the customer.	Would be useful and should be investigated further.	SCE agrees that many customers do not adequately estimate their bill impacts post-pv installation. We are exploring better ways to inform customers on how they can estimate bill changes. We are also working with our commercial customer account representatives to develop tools that can assist customers and contractors more accurately estimate post-pv bills	Currently done for residential systems in CCSE's Solar for Homeowners Workshop and supported via online tools and information. Not done for non-residential systems due to the complexity of non-res tariffs and variance of customer load profile.	This is something SDG&E does through its interconnection/NEM point of contact
Educate solar contractors to the extent possible on the rate structures at each utility and what rates are recommended for solar customers.	PG&E could potentially have a focused webinar on this in collaboration with other PG&E departments. I know we have done some of this; maybe we need more.	SCE has explored ways to educate contractors on our electricity rates in the past. Because of the complexity and total number of available rate options, we've found that such training only has marginal benefits. Again, as stated above, we are exploring ways to better inform individual customers about their estimated bill changes and rate structure after going solar.	Currently done for residential systems in CCSE's Solar for Homeowners Workshop and supported via online tools and information. Not done for non-residential systems due to the complexity of non-res tariffs and variance of customer load profile.	

ODC Recommendation	PA Comments			
	PG&E	SCE	CCSE	SDG&E
Encourage utilities to find ways to better present information on the monthly bills to reduce their perceived complexity. This may warrant further research in this area to identify the sources of confusion and needed changes to the bill. One customer suggested that the bills estimate the expected yearly true up each month so there are no surprises at the end of the year.	Would be useful and should be investigated further. Effectively same as #33.	SCE has conducted recent studies on what the sources of confusion are in customer bills. We've implemented some changes, but require further input on how those changes have worked and what additional changes can be made. We agree to look into what else can be done.	CCSE would be happy to participate in this process with our utility partners and provide feedback and lessons learned from our interactions with program participants.	Currently being addressed at SDG&E through its Bill Redesign process.
Encourage the utilities to develop a system of checks and balances to ensure that new solar customers are always placed on the right rates.	Would be useful to participants; but utilities may also be concerned about liability associated with telling customers what rate schedule to choose.	SCE is not sure how pervasive of an issue this is, and we recommend that this issue is studied further.	N/A	This places additional liability on the utility. Would prefer they determine this with contractor. Much of this depends on customer usage after solar installed. Until AB1X is abolished, solar friendly tariffs in SD are not as effective as normal tier based structure